

IN INDUSTRY • IN TRANSPORTATION • ON THE SEA • IN THE AIR

DIESEL PROGRESS

FIVE DOLLARS PER YEAR

SEPTEMBER, 1937

FIFTY CENTS PER COPY

behind these generators... **WELL-LUBRICATED POWER**

The powerful drive of today's modern engines depends upon the smooth functioning of every part. *Texaco Ursa Oils* help diesel, gas, and dual-fuel engines deliver their full rated power year after year by guarding against harmful deposits and keeping rings and valves free. This means full compression and complete combustion. Power output stays high, fuel consumption and maintenance costs stay down.

Texaco Ursa Oils—a full line to meet every need—are especially refined to assure *more power* with *less fuel* and *longer periods* between overhauls.

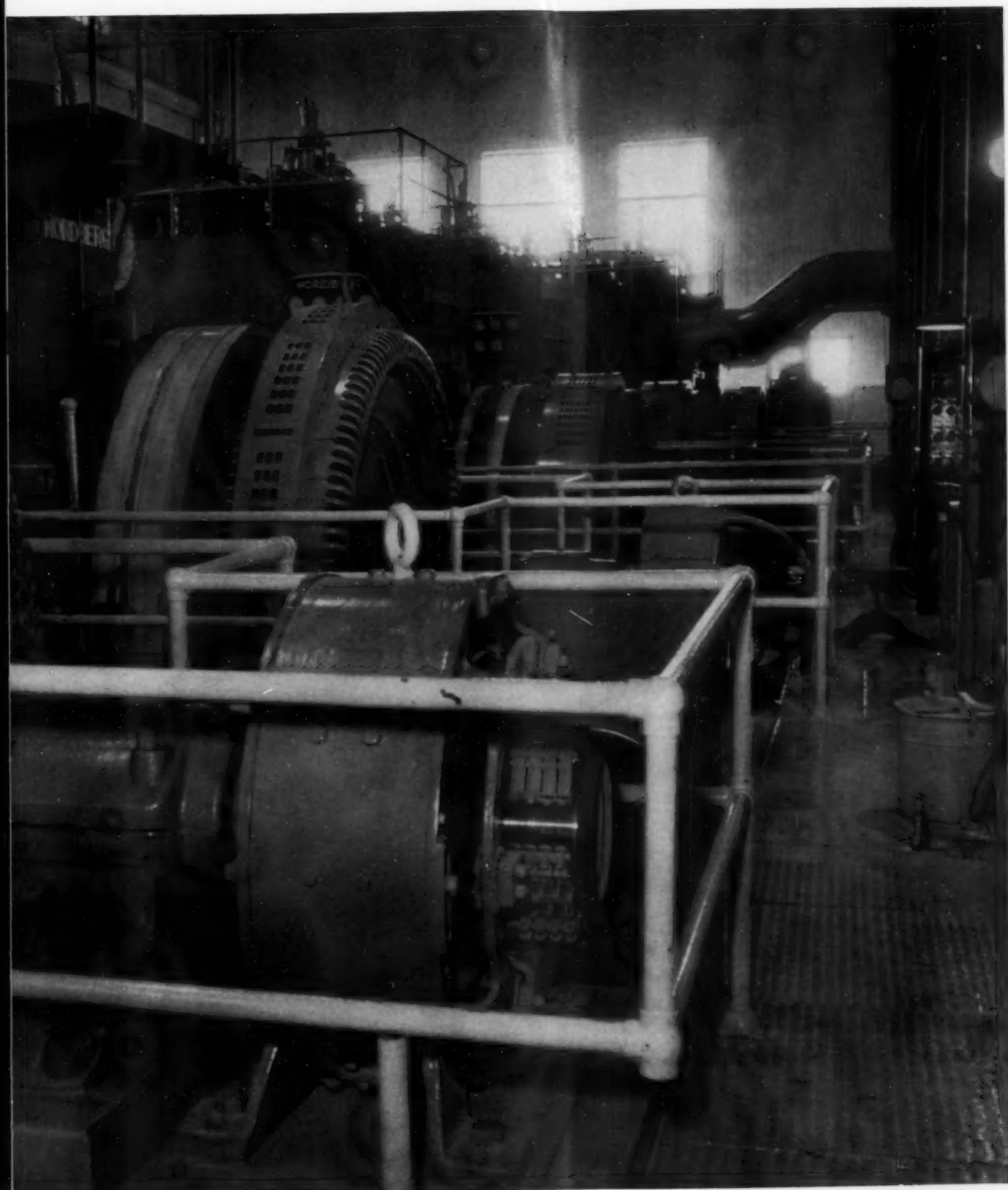
• **For over 20 years, more stationary diesel horsepower in the U.S. has been lubricated with Texaco than with any other brand.**

Your Texaco Lubrication Engineer offers his years of experience in helping you select the right Texaco Lubricant for your needs. You can contact him by calling the nearest of the more than 2,000 Texaco Distributing Plants, or by writing:

The Texas Company, 135 East 42nd Street,
New York 17, N. Y.



TEXACO



URSA OILS FOR ALL DIESEL, GAS
AND DUAL-FUEL ENGINES



HARRISON **KEEPS THIS TRAWLER COOL!**

Harrison Oil Coolers Take the Heat off Heavy-Duty Diesels!
Heat abandons ship . . . when Harrison's aboard! With a payload of 30 tons of halibut, it takes a mighty Detroit Diesel engine to power this fishing boat. And it takes a Harrison oil cooler to do the cooling job *and do it right!*

In fact, you'll find Harrison heat exchangers in every line of industry . . . in every line of defense! That's because you can depend on Harrison, with over 46 years' experience in design, research and manufacture, for top-quality heat-control products. If you have a cooling problem, look to Harrison for the answer.

HARRISON RADIATOR DIVISION,
GENERAL MOTORS CORP., LOCKPORT, N. Y.




HARRISON

DIESEL *and* GAS TURBINE PROGRESS

REX W. WADMAN *Editor and Publisher*

MEMBER OF



Business Publications Audit
of Circulation, Inc.

IN INDUSTRY • IN TRANSPORTATION • ON THE SEA • IN THE AIR

BRUCE W. WADMAN *Managing Editor*

F. HAL HIGGINS *Western Field Editor*

MARTHA GENDELMAN *Copy Editor*

PEGGY R. TOMACK *Production Manager*

RUTH R. REINER *Circulation Dept.*

MEMBER OF



Verified Audit Circulation
Company

DIESEL PROGRESS for September, 1957, Vol. XXIII, No. 9. Published Monthly by Diesel Engines, Inc., 816 N. La Cienega Blvd., Los Angeles 46, California. Phone OLander 5-7410. Subscription rates are \$5.00 for U.S.A. and possessions. All other countries \$7.50 per year. Subscriptions may be paid the London office at £2-12s-6d per year. Accepted as Controlled Circulation Publication at Long Prairie, Minnesota.

DIESEL PROGRESS is indexed regularly by Engineering Index, Inc. and is available in microfilm editions from University Microfilms, Inc., Ann Arbor, Michigan.

MEMBER OF



Magazine Publishers
Association, Inc.

CONTENTS FOR SEPTEMBER, 1957

Vero Beach, Florida	27
San Jose Sewage Disposal Plant	30
New Los Angeles Compressor Station	33
The Ubiquitous Diesel Shovel	36
Florida's New Dragline	38
Ways To Lead Water To Work	40
New Haven's Dalzell I	42
Diesel Equipment Works To Complete Highway	44
Inland Navigation Company	46
The Pomme De Terre Dam	48
Barton, Vermont	50
Why Buy A Turbocharged Diesel?	52
M/V Philip Sporn	53
Automotive Diesel Progress	54
Eastern Diesel Observations	56
What's Going On In England	58
Diesel Muscles On The River	61

EDITORIAL AND PRODUCTION OFFICES

816 N. La Cienega Blvd.

Los Angeles 46, Calif.

BUSINESS OFFICES

MILWAUKEE 3:
Bruce W. Wadman
2040 W. Wisconsin Ave.
Division 4-5355

LONDON E.C. 4:
G. L. Featherstonhaugh
St. Paul's Corner
Ludgate Hill

TULSA 3:
G. F. Cozier
611 Mayo Bldg.
Diamond 3-1335

FIELD EDITORS

MIAMI, FLA.:
Edwin Dennis
250 W. 50th St.
TUxedo 8-2188

LOS ANGELES 46:
James Joseph
8421 Melrose Ave.
OLive 3-4542

HOUSTON, TEXAS:
Michael T. Pate
1948 Lexington
JAckson 2-9088

TULSA 3:
Jack F. Cozier
305 Daniel Bldg.
Diamond 3-1335

JEFFERSON CITY, MO.:
L. H. Houck
400 Linden Dr.
Phone: 6-2993

NORTHWOOD, MIDDX, ENGLAND:
B. W. Lensdowns
"Oaklands," Nicholas Way

DETROIT 39, MICH.:
James W. Brown
13936 Kinloch Road
KENwood 2-1545

EVANSVILLE, IND.:
A. D. Burroughs
605 W. Maryland St.
HArrison 3-7313



FRONT COVER ILLUSTRATION

View down the line of the new Ducommun Street Compressor Station in Los Angeles. Eight Ingersoll-Rand 2000 hp turbocharged gas engine-driven compressors are installed in this brand new station.

FULLER ROADRANGER® Transmission standard in new LeT-WesCo truck

Fuller's 9-speed R-1150 ROADRANGER Transmission was selected for the revolutionary new 30-ton LeTourneau-Westinghouse off-road hauler "... because of the wide range of gear selection and speeds, plus the fact that it shifts easily and quickly."

Merle R. Yontz, President, says: "We wanted a tough, fast, high-production hauler which would be cheaper to run, simpler to maintain, and easier to operate—one that would make more money per trip for its owners."

So, the LW-30 features the new Fuller R-1150 ROADRANGER Transmission, designed specifically for extremely heavy-duty off-highway service. Advantages:

- No gear splitting—9 selective gear ratios are evenly and progressively spaced
- Pre-selective countershaft brake for easier, quicker shifts
- Average 38% between ratios
- One shift lever controls all 9 forward and 2 reverse speeds
- Engines operate in peak hp range with greater fuel economy
- Less driver fatigue—1/3 less shifting than with comparable multi-speed transmissions
- Range shifts pre-selected—automatic and synchronized

Check with your local truck dealer for the *right* Fuller Transmission for your job.

New LeT-WesCo LW-30 truck, powered by 375 hp Cummins 4-cycle, turbo-charged, V-8 engine, features Fuller 9-speed R-1150 ROADRANGER Transmission.



FULLER MANUFACTURING COMPANY, Transmission Division, Kalamazoo, Michigan • Unit Drop Forge Division, Milwaukee 1, Wisconsin • Shuler Axle Company, Louisville, Kentucky (Subsidiary) • Sales & Service, All Products, Western District Branch, Oakland 6, California and Southwest District Office, Tulsa 3, Oklahoma.





Engines for this fast new fireboat are protected by Purolator filters

Diesels on Baltimore's powerful new fireboat easily push it along at a snappy 17 mph while it discharges 12,000 gallons of water every minute. But if dirt brought in by even the cleanest fuel supply should ever get into the engines, this outstanding speed and power would quickly suffer... and expensive repairs would follow. That's why Purolator fuel and by-pass lube filters are included as original equipment on all engines in the ship.

It pays for you to use Purolator filters in your diesel lube systems, fuel lines and fuel injection system. And you can't improve on Purolator Micronic® filtration

because the micronic element is made of plastic-impregnated cellulose which makes it waterproof, warp-proof and unaffected by engine temperatures or crankcase dilution. It filters particles so small they can be measured only in microns — .000039 inch.

Filtration For Every Known Fluid

PUROLATOR

PRODUCTS, INC.

Rahway, New Jersey and Toronto, Ontario, Canada

The Engineer's Report

CASE HISTORY
RPM DeLo Oil R.R.
LUBRICANT

Western Pacific R.R. Co.,
FIRM

Special oil maintains high average mileage record!



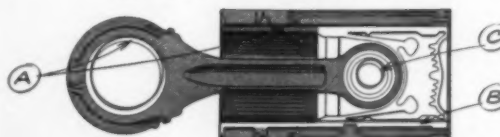
1776 CYLINDER ASSEMBLIES make up the 111 diesels in road freight service on the Western Pacific R.R. These units, as well as all passenger locomotives on the line, are lubricated with RPM DELO Oil R.R. Maintenance records of several years on freight locomotives show following average actual miles on parts removed for any reason: wristpins and bushings, 413,675 miles; pistons, 376,018 miles; liners, 354,101 miles. A representative assembly is shown in insert, just as it appeared after 476,497 actual freight miles. Note cleanliness of parts and free rings—typical of Western Pacific's experience with RPM DELO Oil R.R., the standard on the line since 1949.

FOR MORE INFORMATION about petroleum products of any kind or the name of your distributor, write or call any of the companies listed below.



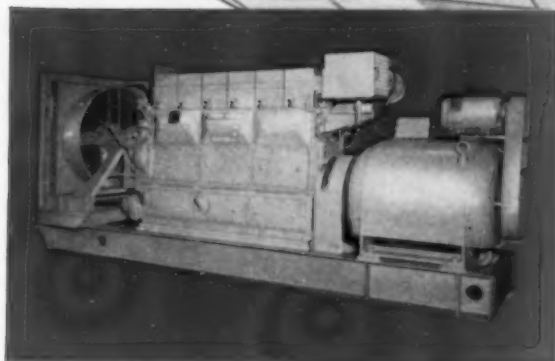
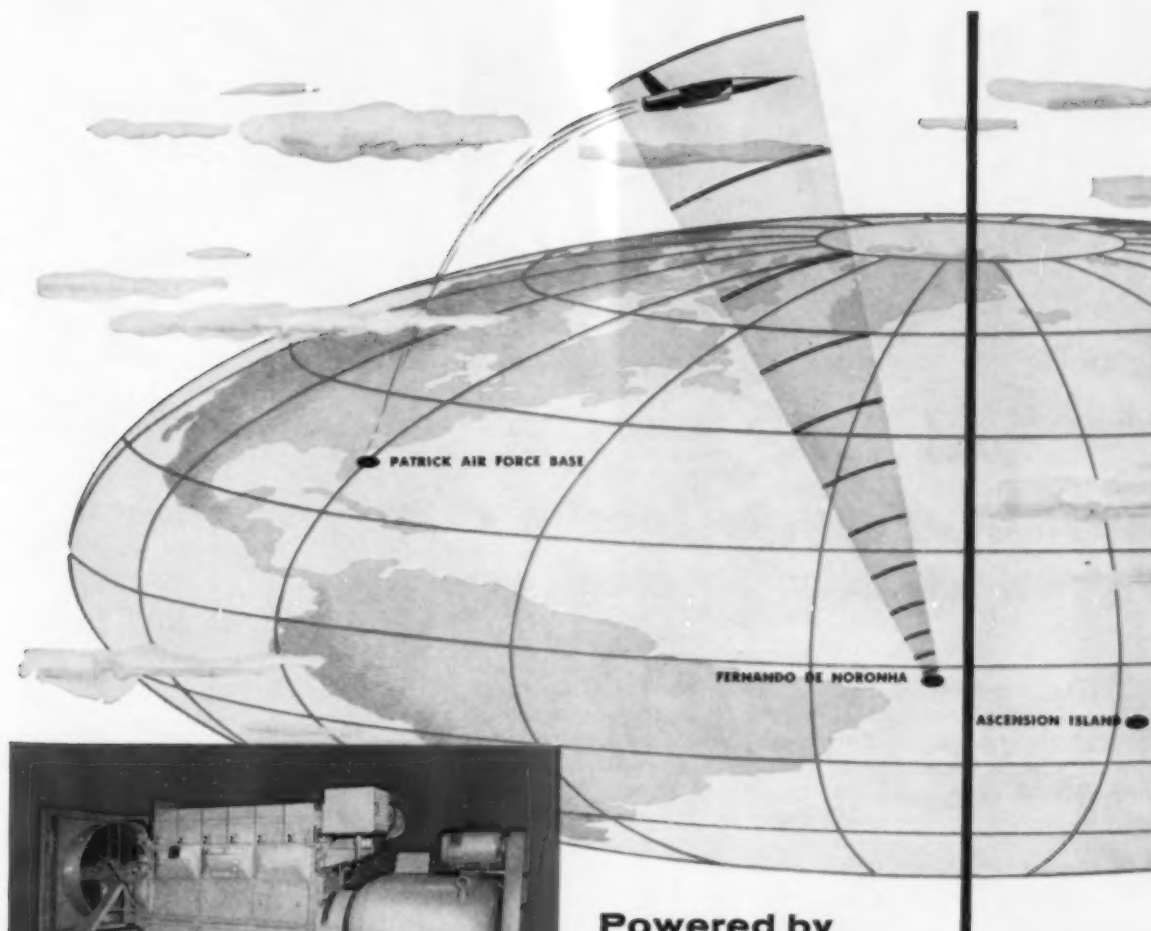
TRADEMARK "RPM DELO" REG. U. S. PAT. OFF.

How RPM DELO Oil R.R. prevents wear, corrosion, oxidation



- A. Special additive provides metal-adhesion qualities...keeps oil on parts whether hot or cold, running or idle.
- B. Anti-oxidant resists deterioration of oil and formation of lacquer...prevents ring-sticking. Detergent keeps parts clean...helps prevent scuffing of cylinder walls.
- C. Special compounds stop corrosion of any bushing or bearing metals and foaming in crankcase.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado



**Powered by
WHITE'S Superior Diesels**

**Down-Range Stations will
Track U.S. Guided Missiles**

Along a 4,400 mile testing corridor sweeping from Florida southeastward to Britain's Ascension Island, U.S. guided missiles burn their way through tropical Atlantic skies. Soon new radar eyes will be following their flight from atop tiny rocky islands located hundreds of miles from any power station. The U.S.-built tracking and control stations will fill gaps along the missile path . . . will be watching, recording, and ready to explode the missile in air should its behavior become erratic!

Because the guided missile program is vital to U.S. defenses—yet must be conducted with full protection to lives and property—dependability of every piece of tracking equipment is doubly essential. Dependable White's Superior Diesel engines meet the U.S. Air Force

requirements for supplying power on this down-range project. These high-quality, heavy-duty engines are world renowned for their continuous, dependable operation and easy starting. Superior's precision construction provides long, trouble-free performance with low maintenance and utmost fuel economy.

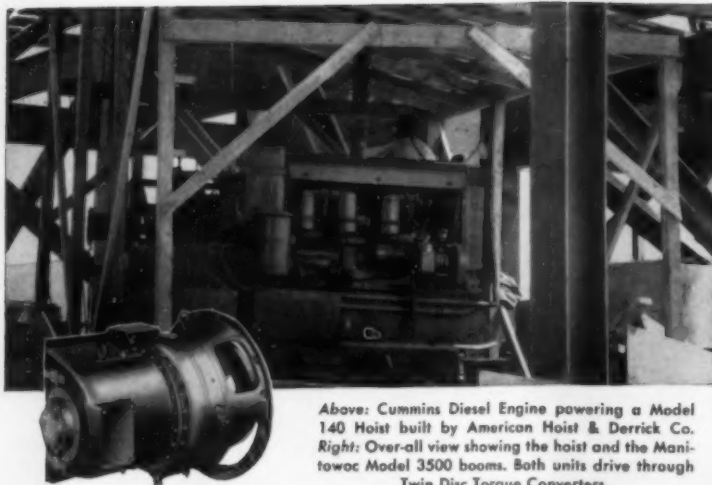
Portions of other strategic U.S. defense systems, like the "Texas Towers" (Early Warning Radar Stations), the "DEW" line (Distant Early Warning), and the "SAGE" project (Semi-Automatic Ground Environment), will also rely on Superior engines—proof again of their rugged dependability. If your requirements range from 215 to 2150 horsepower, or 150 to 1500 KW, benefit from White's many advanced Superior design features! Get complete information now!



White Diesel

WHITE DIESEL ENGINE DIVISION

THE WHITE MOTOR COMPANY Plant and General Offices: Springfield, Ohio



Above: Cummins Diesel Engine powering a Model 140 Hoist built by American Hoist & Derrick Co. Right: Over-all view showing the hoist and the Manitowoc Model 3500 booms. Both units drive through Twin Disc Torque Converters.

How heavy-duty torque converters lend "gentle touch" to steel erection

At ALCOA's Warrick Works, now under construction near Evansville, Indiana, bystanders are daily witnessing two steel erecting machines performing with all the grace of an accomplished ballet dancer . . . and doing it with loads up to 29 tons!

The machines are part of the equipment operated by John F. Beasley Construction Co., Chicago. One is a Model 140 Hoist manufactured by American Hoist & Derrick and equipped with a Cummins Diesel Engine and a Twin Disc Three-Stage Torque Converter. The other is a Manitowoc Model 3500 erecting crane with a Caterpillar D17000 Diesel Engine and a Twin Disc Three-Stage Torque Converter.

The two erecting machines are working on 16-story structures for a power plant. The work requires very delicate steel setting . . . such as setting 17-ton cross members between columns and then, with a steel ball weight, gently tapping them into place.

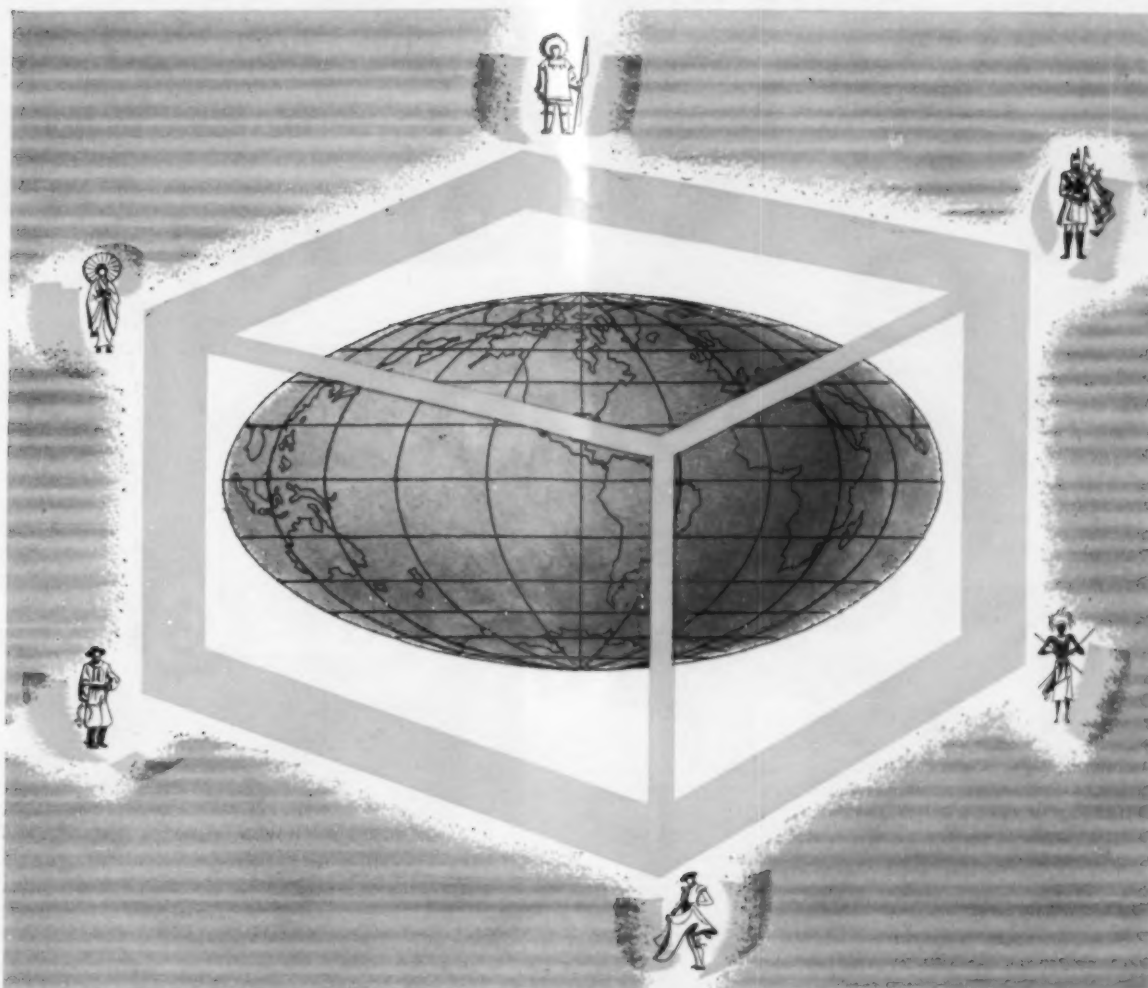
As E. J. Delahousay, of John F. Beasley Construction Co., puts it: "With Twin Disc Torque Converters, you can swing fast . . . and lift without fear of engine stall. They make the machines handle easier and enable the operator to place his load just where it has to go!"

Twin Disc Torque Converters are excellent for delicate holding and inching of loads through simple throttle manipulation. Besides this, however, they prove their worth in many ways . . . such as permitting engines to operate in their most efficient speed range at all times, with full hp output available whenever required . . . automatically matching engine torque to load requirements . . . cushioning out destructive shocks and vibrations between driving and driven equipment . . . and holding constant tension on cables, for greatly increased cable life.

Be sure to specify a Twin Disc Torque Converter with your next new excavator, crane or hoist. They are available in both three-stage and single-stage designs . . . from 30 to 1000 hp in capacity.

Twin Disc Clutch Company, Racine, Wisconsin; Hydraulic Division, Rockford, Illinois.





In the far corners of the globe...

The performance and the brand are
the same around the world

Other outstanding Shell Industrial Lubricants

Shell Tellus Oil—for closed hydraulic systems

Shell Alvania Grease—multi-purpose industrial lubricant

Shell Turbo Oils—for utility, industrial & marine turbines

Shell Dromas Oil—cutting oils for high-production metalworking

Shell Tulona R Oil 40—anti-wear crankcase oil for diesel locomotives

Shell Rimula Oil is a heavy-duty oil designed to solve the toughest lubricating problems in diesel engines.

Rimula® Oil reduces cylinder and bearing wear caused by acidic combustion products that are increased by low jacket temperatures. It remains stable under the widest temperature extremes encountered in modern operation. It keeps engine parts clean and operating efficiently over

longer periods...effecting worth-while savings in labor and parts.

Rimula Oil, regarded in the U.S.A. by manufacturers and operators as an indispensable accessory to heavy-duty vehicular operation, is available to your customers abroad under the same brand. For full information, write: Shell Oil Company, 50 West 50th St., New York 20, N. Y., or 100 Bush St., San Francisco 6, Calif.

SHELL RIMULA OIL





Rugged Strength- FOR ORE UNLOADERS

Steel Castings by:

ERIE FORGE & STEEL CORPORATION

CAST STEEL TOP PIVOT TRIPOD.
WEIGHT 16,010 POUNDS.



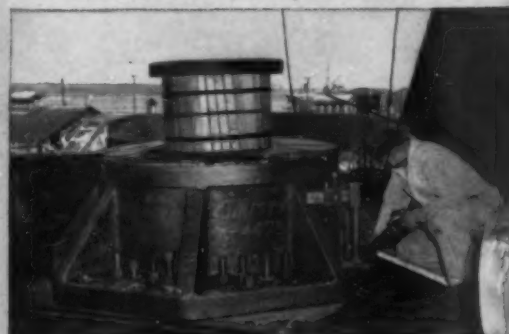
COMPLETED VESSEL

Typical of Erie Forge & Steel Corporation's versatility in making steel castings from raw material to finished product are these weighty ship's unloader components for ore carrier fleets plying the Great Lakes. Unloading iron ore cargoes is a rough job. The equipment to do it demands quality steel castings with the cast-in strength and "staying power" to handle the heavy ore with speed and utmost dependability. No ordinary steel casting will do the job. Quality control from raw material selection, to furnace, to mold and through machine shop, step by step, results in components which prove their high value every day in ore transportation from range to dock-side destination. You can be *sure* of steel castings, produced "Under One Responsibility and One Control", which will do a lot more than just "meet" your requirements when you deal with us. Your Erie Forge & Steel field man will be seeing you shortly.

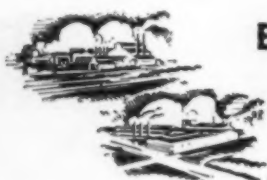
* PHOTOS COURTESY OF CHRISTY CORPORATION, STURGEON BAY, WIS.



CAST STEEL EYE BAR PIVOT. WEIGHT 8,830 POUNDS.



CAST STEEL BASE PIVOT. WEIGHT 25,660 POUNDS.



ERIE FORGE & STEEL CORPORATION
ERIE, PENNSYLVANIA

MEMBER AMERICAN IRON AND STEEL INSTITUTE



Steam rig converted to Diesel-Electric



Two skid-mounted Electro-Motive 875-hp generating sets power Grey Wolf's recently converted rig. Each 8-cylinder engine drives two 500-kw dc generators that supply power to electric drive motors on draw works, rotary and mud pumps. Electrical control cabinet is located on skid to right of engines.



View from derrick floor shows simple arrangement of components on ground. Single 625-hp dc electric motors drive mud pumps. Electric cables run from generating units to various motors on overhead runways. Cables permit placing equipment to location conditions.



Driller's control stand provides maximum visibility for every operation. Simple, sensitive controls provide smooth and rapid acceleration of loads with positive control of speed and torque. From this one panel, driller controls all Diesel-Electric equipment.

GREY WOLF ADDS NEW LIFE TO OLD UNIT WITH **ELECTRO-MOTIVE POWER**

Grey Wolf Drilling Company of Houston expects its newly converted Diesel-Electric rig will cut rig-up time to three days—just half the time it took with the old steam unit.

In addition, "trips" are faster with the new rig and drilling speeds were judged faster on two locations where depths up to 13,000 feet were reached. Maximum drilling depth is well beyond 17,000 feet.

Why Diesel-Electric?

Grey Wolf saw two distinct advantages: Diesel-Electric would adapt readily to present components, thus reduce costs; and because components are connected by flexible electric cables, the rig could be broken into skid-mounted packages for fast transport and quick rig-up.

Why Electro-Motive Power?

A "packaged" system was one reason Grey Wolf decided on Electro-Motive Power. For this system is designed and built to work together—one manufacturer—one source of responsibility. Other reasons were the accurate control and torque characteristics of Electro-Motive Power plus its demonstrated economies of long life and low maintenance on both land and offshore rigs.

Have you considered the advantages of Diesel-Electric for your drilling operations? Contact your Electro-Motive Representative for complete details.

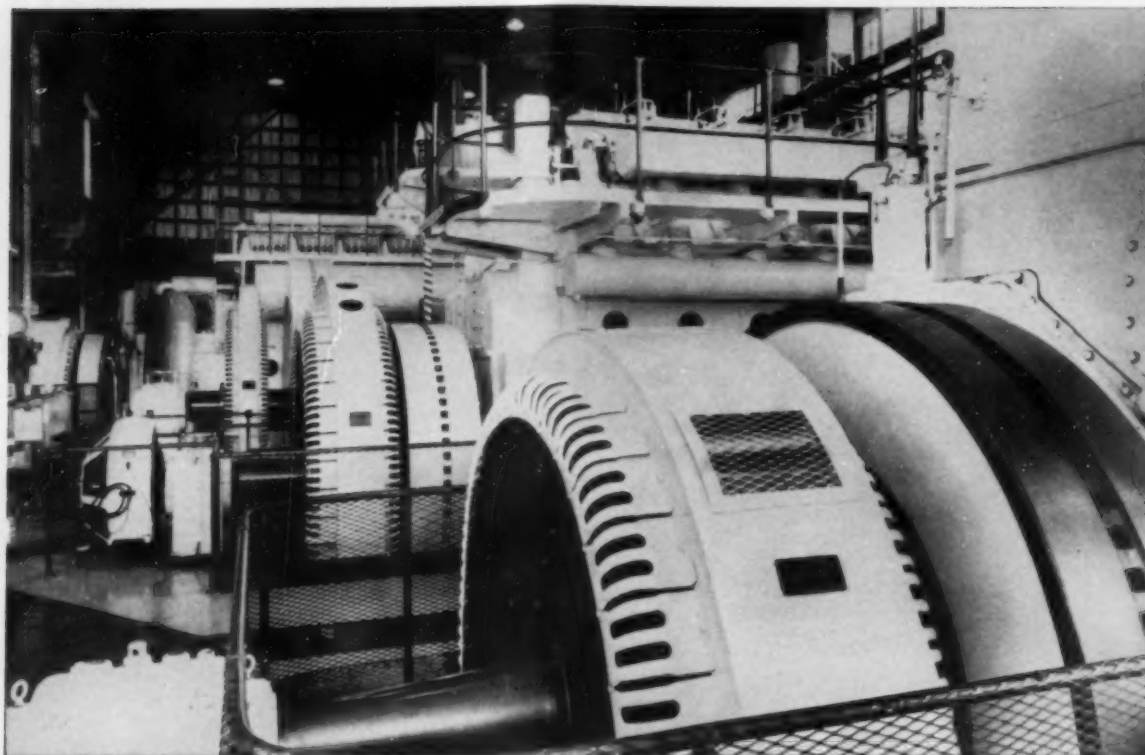
ELECTRO-MOTIVE DIVISION GENERAL MOTORS LA GRANGE, ILLINOIS

In Canada: General Motors Diesel Limited, London, Ontario

Petroleum Industry Sales Offices: Dallas and Houston, Texas;

Morgan City, Louisiana; Los Angeles, California.

 Look to **COOK** for Better Rings!



**Dependability and economy
of Cook piston rings
contribute to Vero Beach's expansion!**

HERE you see the interior of the Vero Beach (Fla.) Municipal Power Plant—one of the most efficient and fastest-growing municipal power operations in all America . . .

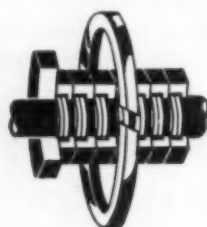
In the foreground is a 1630-hp Nordberg Diesel engine. Behind it are two other Nordberg engines—one a 4050-hp unit, the other a 4500-hp unit. Now being installed, but out of the picture, is still a fourth Nordberg—this one rated 7550-hp.

The newest Nordberg, a 29" bore engine, will bring Vero Beach's plant capacity up to 13,925 kw

— or more than five times the 2450-kw capacity of just five years ago!

Cook Oil Control Rings are used in the first three of these engines, and *all* Cook Rings have been specified for the fourth Nordberg, now being installed!

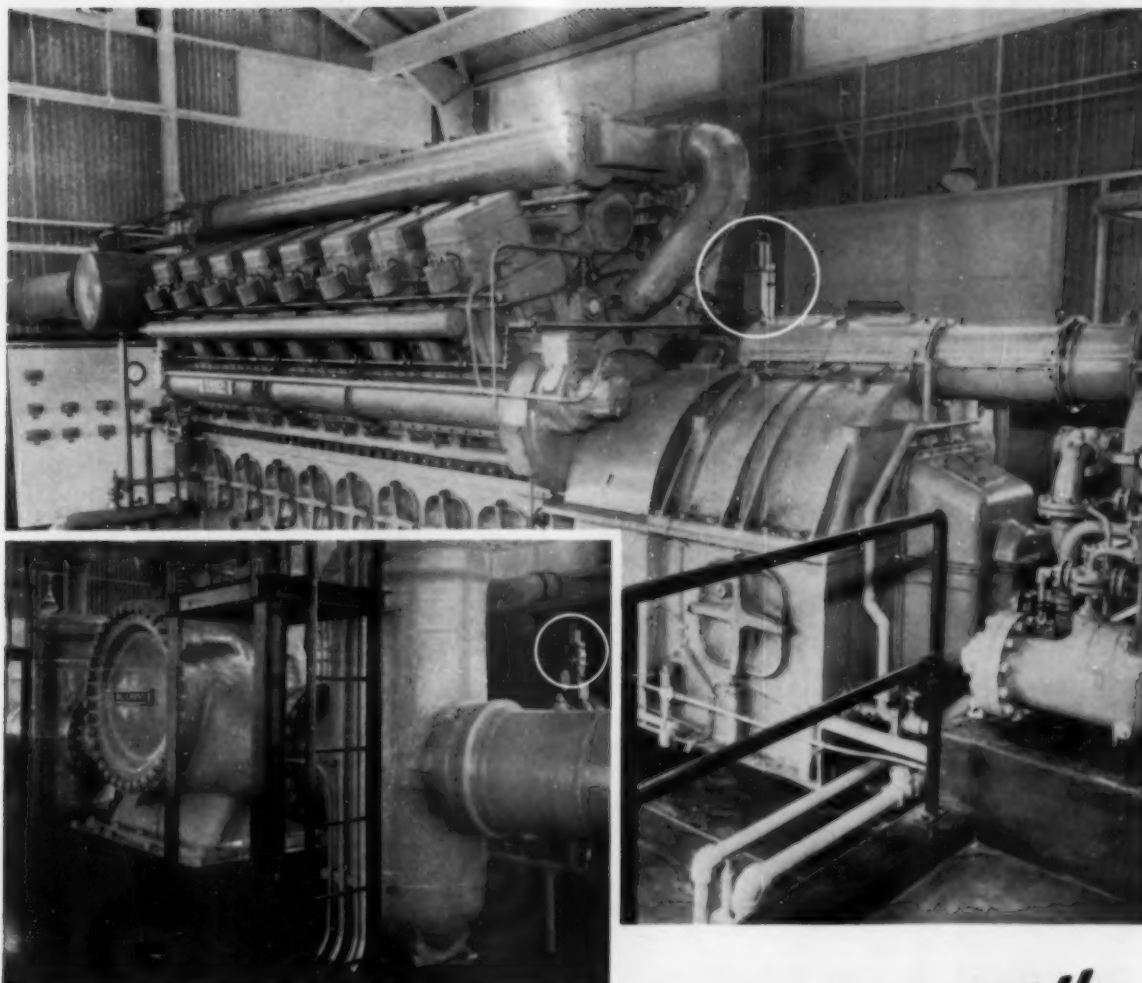
Whatever your piston-ring requirements—Plain, Full Sealing, Segmented or Oil Wiper—there's a "job-engineered" Cook Ring to fill the bill. Write direct for all the facts. C. Lee Cook Company, 940 South 8th Street, Louisville 3, Kentucky.



**C. LEE
COOK
COMPANY**

Division of Dover Corporation

Rings and Packings Since 1888



THIS COMPRESSOR STATION DEPENDS ON *Massey* GOVERNORS FOR PRECISE POWER REGULATION

A Massey Hydraulic Governor provides dependable control of a Nordberg engine at Transcontinental Gas Pipe Line's Station No. 23, near Houston—the first installation of a Nordberg 16-cylinder Supairthermal® spark ignition gas engine-gear set driving a DeLaval centrifugal compressor.

Whatever *your* problem of power control for diesel, gas or dual-fuel engines, you can solve it with a Marquette or Massey Governor. Our engineering facilities are at your disposal.

<i>Marquette</i> GOVERNORS	<i>Massey</i> GOVERNORS
MARQUETTE DIVISION CURTISS-WRIGHT <small>CORPORATION • CLEVELAND 10, OHIO</small>	
<small>Other Marquette Products: AIRCRAFT WINDSHIELD WIPERS • ANTI-FRICTION BEARING TEXTILE SPINDLES • SPRING CLUTCHES PRECISION PARTS AND ASSEMBLIES • ROTARY OIL PUMPS</small>	

3 dependable products for the diesel industry

DE LAVAL IMO PUMPS

De Laval IMO pumps do a dependable job during long years of service. The reason is IMO design simplicity. De Laval IMO's have only three moving parts—smoothly intermeshing rotors that propel the fluid axially in a steady flow without churning, pocketing or pulsation. There are no reciprocating parts to wear or become noisy. Quiet, compact IMO pumps are excellent for direct-connected, high-speed operation. They can be furnished in capacities to 1,000 gpm and pressures to 1,500 psig.

DE LAVAL HYDRAULIC FAN DRIVES

De Laval Hydraulic Fan Drives for air cooled heat exchangers and cooling towers offer these important advantages. They *save* power since the fan operates at full speed only a portion of the time. They provide *accurate, automatic* control of engine jacket water temperature, and also assure complete operational flexibility. These units stay on the job for years. As shown, both IMO motor and speed reducer are mounted and factory aligned on a single bedplate.

DE LAVAL HIGH PRESSURE TURBOCHARGERS

De Laval turbochargers offer pressure ratios of 3:1 as well as higher compressor and turbine efficiencies than those found in conventional turbocharger systems. Output of heavy duty diesel, gas and dual-fuel engines may be doubled by De Laval turbochargers without increasing thermal loading. Exclusive Monorotor design offers a compact lightweight unit of sturdy construction. De Laval turbochargers are self-adjusting to engine loads, can be used on 4- and 2-cycle engines.



You'll find additional data in these De Laval Bulletins. Write for your copies.



DE LAVAL

Steam Turbine Company

TRENTON 2, NEW JERSEY



6 reasons why STANODIESEL Oil M can help you get better diesel engine performance



Stability. Only selected distilled lubricating stocks from Mid-Continent crudes are used to make STANODIESEL Oil M. Base stocks are then solvent-extracted to remove unstable components. Oil is further stabilized by an oxidation inhibitor. The oxidation inhibitor used also acts as a metal deactivator, forming a barrier against corrosion. As a result of these advanced refining techniques, STANODIESEL Oil M resists the formation of varnish, sludge, acid bodies and carbon-like deposits. Viscosity increase, a problem in many types of service, is likewise controlled.

Detergent-Dispersant Qualities. Additives keep engines clean and disperse contaminants by holding them suspended in harmless form.

High Viscosity Index. STANODIESEL Oil M's high V. I. means easier cold starts, better sealing of rings and lower oil consumption at running temperatures.

Nonfoaming. Antifoamer additive eliminates foaming. STANODIESEL Oil M may be used in hydraulic governors.

Low Pour Point. STANODIESEL Oil M is propane-dewaxed to remove undesirable constituents and permit flow at low temperature.

Less Engine Maintenance. STANODIESEL Oil M helps give these low maintenance benefits: reduced port deposits, fewer stuck rings, less cylinder wear, fewer bearing problems.



STANDARD OIL COMPANY
(Indiana)

Get all the facts about STANODIESEL Oil M from your local Standard Oil industrial lubrication specialist anywhere in the 15 Midwest and Rocky Mountain states. Or write Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.



ROBERT S. STEVENSON

Portrait by Fabian Bechroch

"At Allis-Chalmers we believe that we can do our fellow-employees no greater favor than to recommend that they invest in a 'nest-egg' fund of U.S. Savings Bonds.

"While this program has been going on for many years—made easy through the Payroll Savings Plan—we recently offered all Allis-Chalmers people a chance to review their individual bond purchasing schedules and to bring them up to date.

"As a result, more than 52% of the total

Allis-Chalmers organization of about 40,000 people are buying U.S. Savings Bonds at a rate of approximately \$6,000,000 a year."

ROBERT S. STEVENSON, *President*
Allis-Chalmers Manufacturing Company

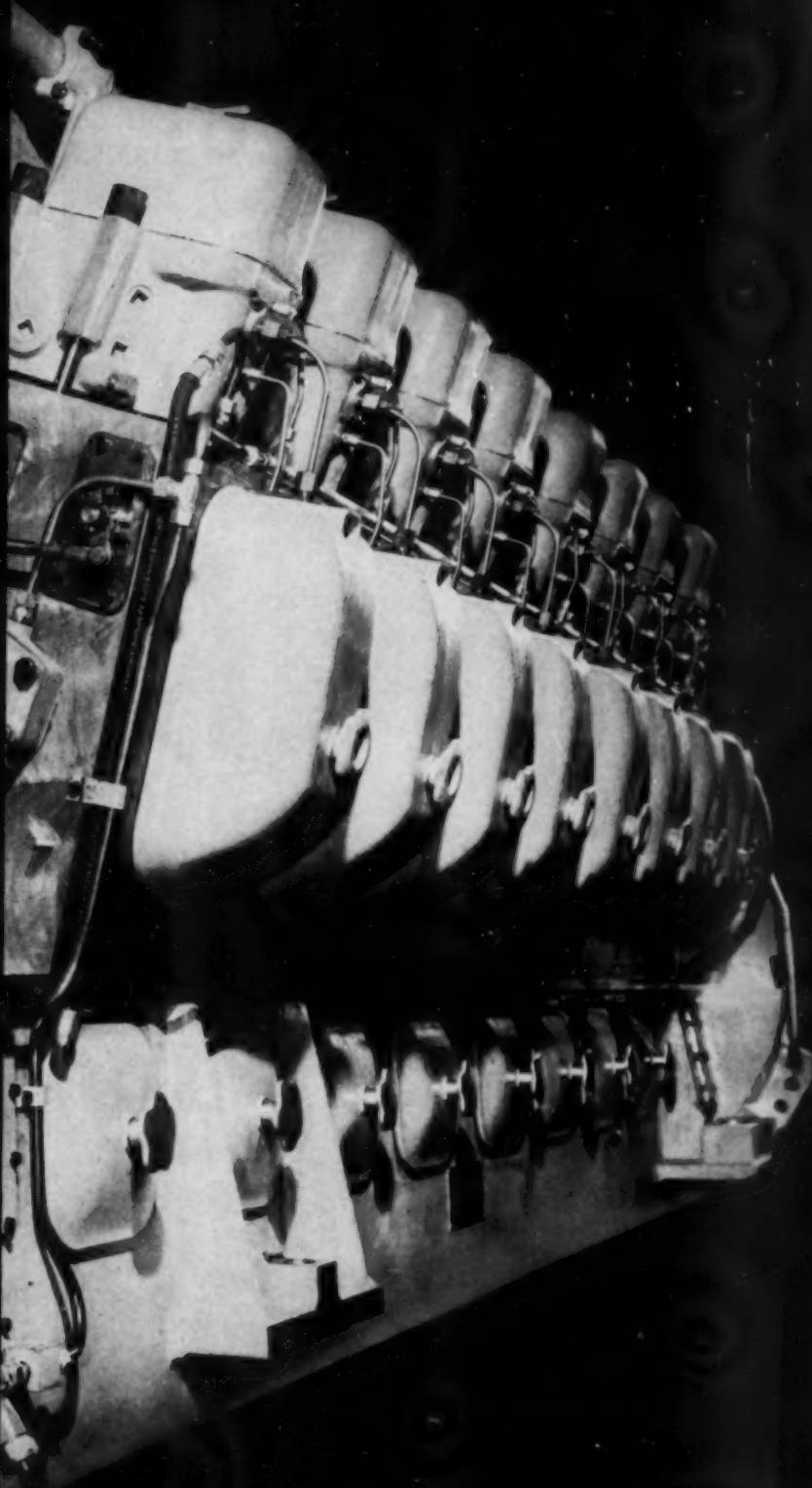
Start your employees on the path of future financial security through automatic savings in the new and improved Series E Savings Bonds. It's simplicity itself. Just contact your State Director, U.S. Savings Bonds Division. He'll provide all the material and assistance you need to install a Payroll Savings Plan or build enrollment in one already existing. Look him up in the phone book or write for full information to the U.S. Savings Bonds Division, Treasury Department, Washington, D.C.

The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

R. W. Farnham
Editor—DIESEL PROGRESS



TODAY—PAYROLL SAVINGS ENROLLMENT IS AT A NEW PEACETIME PEAK!



ALCO TRIMS WEIGHT BOOSTS POWER CUTS COSTS IN MODERN 251 DIESELS

The ALCO 251 diesel is made for today's requirements of stationary service. Its base and block are rugged weldments for lower weight, higher strength than old-time castings. Four-point mounting eliminates grouting and heavy foundation costs. Use of modern proven materials in the power section extends the life of the 251 diesel, too, and maintenance is easier and less costly.

More power per pound is provided by improved fuel injection, modern turbosupercharging plus an air after-cooler. The basic 251 diesel can be easily adapted to any stationary service by simply adding standard parts, including dual fuel, and it is especially suitable for automatic or remote operation.

ALCO's regional warehouses—seven located throughout the country—give speedy service on parts orders. This, plus the fact that all models of the 251 diesel have interchangeable parts, means that your parts inventories can be kept low.

If you would like more information on the advantages of the ALCO 251 diesel, contact your nearest ALCO sales office, or, if you wish, write for Bulletin DE-6 to Transportation Products Division, Dept. TR-3, P. O. Box 1065, Schenectady 1, N. Y.

Condensed Specifications for ALCO 251 Diesels

No. Cyl.	Bore and Stroke (in.)	BPM Range	BHP Range	Approx. Wt Dry (lb)
6	9 x 10½	350-1000	550-900	22,100
12	9 x 10½	350-1000	1100-1800	32,650
16	9 x 10½	350-1000	1470-2400	42,000

ALCO

ALCO PRODUCTS, INC.

NEW YORK

Sales Offices in Principal Cities

*Locomotives • Diesel Engines • Nuclear Reactors
Heat Exchangers • Springs • Steel Pipe • Forgings
Weldments • Oil-Field Equipment*

Northeast Diesel

Notes

By Arnold B. Newell

QUAKERTOWN, Pennsylvania has just placed in service an Enterprise diesel of 1440 hp driving a 1,000 kw generator for municipal power generation. The sale was made by Enterprise Engine and Machinery Company of New York City.

THE Lynn-New York Company has purchased a Detroit Diesel model 62407 to power a deep well turbine pump for public water supply in the middle district of Long Island, New York. The Griffin Equipment Corporation of New York sold the engine.

CAPTAIN Arthur J. Pedersen of South Bristol, Maine, has just taken delivery of his new scallop dragger *Snoopy*. This is a 76 footer of wood construction powered by a 300 hp Caterpillar marine diesel with 3.93:1 reduction gear. The boat was designed by Dwight S. Simpson & Associates of Boston and built by Gamage Shipyard at South Bristol.

A MODEL 304 Koehring $\frac{3}{4}$ -yard shovel has just been repowered for John Sheehan of Massena, N. Y., for use in general contracting work on and around the St. Lawrence Seaway. The engine is a Cummins HRCIP 400 sold by Cummins Diesel Central New York, Inc. of Syracuse.

A. S. Wilkstrom, Inc., one of the major contractors on the St. Lawrence Seaway has recently commissioned the tug *St. Regis* for use in connection with construction of a barrier at Cromwall Island. The tug, of all welded construction, is 57 ft long, 17 ft beam and is powered by a Cummins diesel model VT-12-M rated 600 hp at 2100 rpm. The reverse reduction gear set is a Capitol model H.P.C. with 4.5:1 reduction ratio. Cummins Diesel Central New York, Inc. sold the engine.

BORMANS Motor Express of Binghamton, N. Y. has repowered a Mack Tractor model B 61 with a Cummins model JT 6-B turbodiesel rated 175 hp. The conversion and engine sale was made by Cummins Diesel Central New York, Inc. of Syracuse.

THE self stabilizing submersible type off-shore drill barge *Jim Woodruff* has been completed by the Beaumont yard of the Bethlehem Steel Company to design by Friede & Goldman Inc. of New Orleans for the Penrod drilling company of Shreveport, La. The barge has a length of 190 ft beam, 150 ft and 12 ft depth of hull. It is powered by five Caterpillar D397 diesels each driv-

ing a General Electric generator of 500 hp output. There are three similar ac auxiliary units of 300 kw capacity, 3 phase, 60 cycle, 480 volts.

THE Atlantic Towing Co. of Atlanta, Georgia, has ordered a 92½ ft tug of 2100 hp geared diesel drive from the Equitable Equipment Co. of New Orleans.

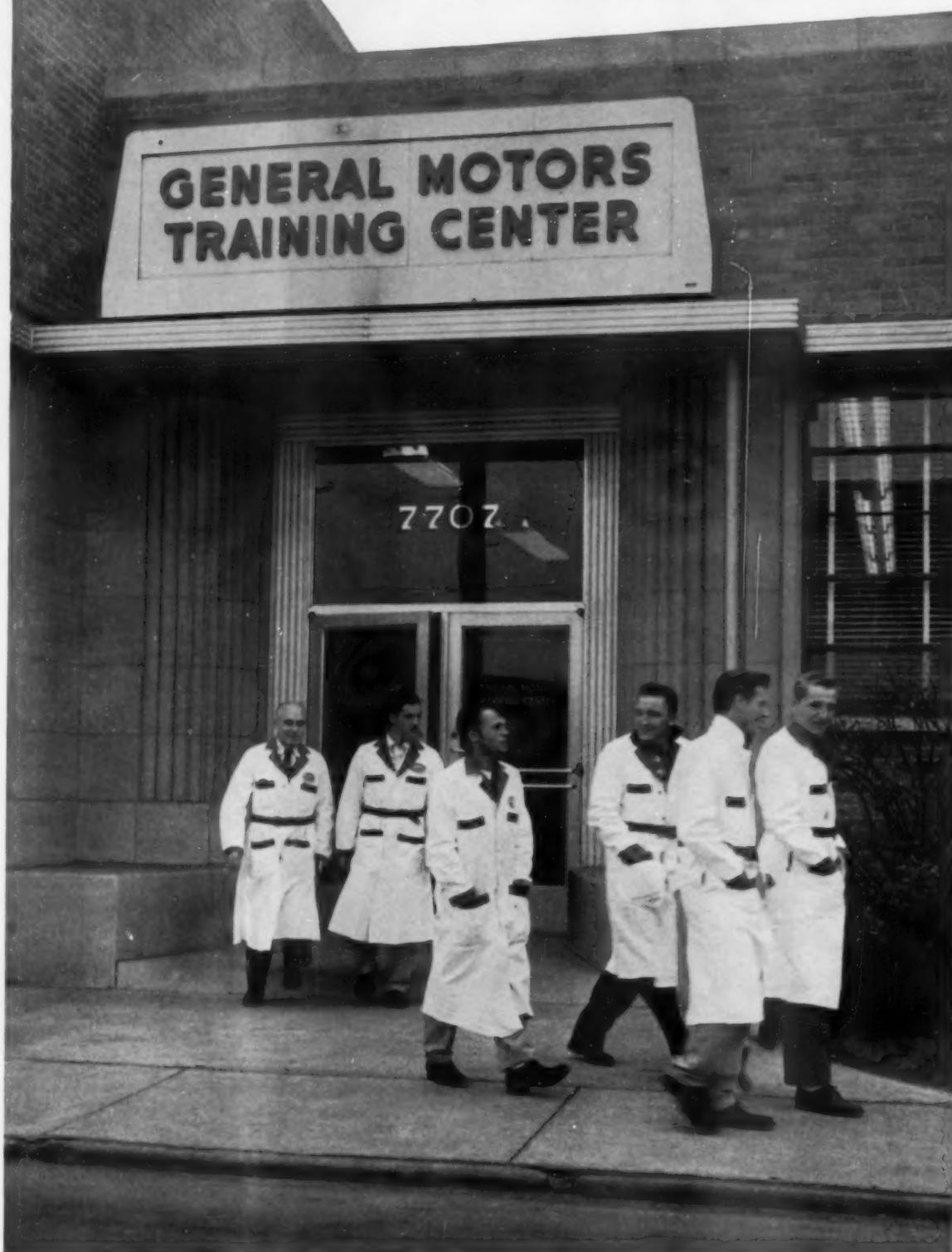
EIGHT model 6 BTd Euclids have been repowered by Cummins Diesel Central New York, Inc. for the Walsh Construction Company, one of the largest general contractors in the East. The new engines installed are Cummins model NHRDIS 600 rated 300 hp at 2100 rpm.

THE Morehead City Shipbuilding Co.

of Morehead City, N. C. has delivered a 55 ft salvage boat to Captain Nick Zinkowski for general salvage service along the Atlantic Coast. The propulsion engine is a General Motors series 6-71 diesel.

ELECTRON, Inc. of New Jersey has purchased a 150 kw generating set powered by a General Motors, Detroit

Typical of the 30 General Motors Training Centers, offering one-week courses in Delco-Remy equipment, is this Detroit unit.



Diesel Engine Division diesel model 62406 RD as standby power for the Jersey City incinerator plant. Griffin Equipment Corp. of New York sold the engine.

PURCHASE of the Robin Line by Moore-McCormack includes agreement to build eight new ships. It is worth noting that big ship construction re-

sults in purchase of diesel driven generating sets the installation of which is mandatory on passenger vessels because all such vessels must have emergency power.

THE Blount Marine Corporation has an order for two 400 ton 1,000 hp cargo boats from the George Engine Company. For the time being no further

particulars have been disclosed.

DIESEL Engineering & Equipment Corp. of Woodbridge, N. J. has just repowered an Allis-Chalmers HD 5 dozer with a General Motors 2-cylinder 71 series diesel for the Dras Construction Company of Elizabeth, N. J.

THE Bronx Towing Company of New

York City has commissioned the 57 ft tug *Bucannon Sisters* powered by a Caterpillar D 397 turbocharged diesel. The boat was built by the Diesel Shipbuilding Company and will be used in general towing services in the vicinity of New York City. The engine is rated 500 hp at 1225 rpm and is a V-12 design with 5¾ in. bore and 8 in. stroke.

ALL five of the new Delaware & Lackawanna railroad tugs have been completed and are now in service on New York Harbor. These are 105 ft vessels powered by model 498 8-cylinder Cleveland General Motors diesels of 1200 hp each. The tugs were built by the Bethlehem Shipbuilding Corporation Staten Island plant. Considerable attention has been focussed on this group of tugs because they conform to a standard design devised by the General Managers Association made up of a group of railroad executives primarily occupied with solutions to problems of harbor operation of railroad fleets.

THE Consolidated Edison Company of New York has purchased a General Motors Detroit diesel model 6030 C to repower a Northwest model 5 crane. The Griffin Equipment Corporation of New York sold the engine.

Regional Sales Manager

Robert K. Ruland, Vice President and General Sales Manager of DeLuxe Products Corporation has announced the appointment of Rex L. Curry as Regional Sales Manager in the Original Equipment Sales Division of the filter company which is a subsidiary of the Walker Manufacturing Company of Wisconsin in Racine. Since April of 1956, Curry has assisted T. J. McNaughten, who after twenty years of service with DeLuxe, has retired for reasons of health. Curry's new duties will consist of field responsibilities in connection with sales of oil filters and replacement cartridges to truck manufacturers and industrial accounts who use DeLuxe filters as original equipment. His present residence is in LaPorte, Indiana but he will move to Racine within the next few months, making the general sales office of the Company his headquarters.

NOW AVAILABLE! The Brand New **DIESEL ENGINE CATALOG**, Volume 22. This giant, 400 page, 10½" x 13½", fully illustrated reference book containing complete and detailed engine and accessory sections is the biggest and best yet. Mail orders are now being filled for this "Bible of the Industry," which has been revised, rewritten and brought up to date completely from cover to cover. Send your order in now for this limited edition, which costs \$10 postpaid plus California sales tax where applicable. Send checks or company order forms to **DIESEL PROGRESS**, 816 N. La Cienega Blvd., Los Angeles 46, California.

THROUGH THESE PORTALS pass the best-trained heavy-duty electrical specialists in the business!

Nowadays the key to profit in truck and bus service lies in the speed and efficiency of your operations. To help you reach that level of efficiency, General Motors Training Centers offer you a one-week training course in Delco-Remy heavy-duty electrical equipment—without tuition or obligation. With 30 of these schools throughout the United States, chances are there's one near you.

Designed to teach speed and efficiency, this course gives you or your men a thorough grounding in up-to-date service methods and factory-specified procedures. Expert factory-trained instructors, using the modern testing and service equipment, are your teachers.

The checking, testing and repairing of Delco-Remy heavy-duty voltage regulators, generators, cranking motors, distributors and other units are covered in the most efficient way—through classroom and practical shop experience.

There is no tuition for the course. Tools, equipment and supplies needed during the training period are provided at no cost. The student's only expenses are his transportation, meals and accommodations.

If you are engaged in truck and bus electrical service, apply for this outstanding course for yourself or for your men. To arrange for admission, write direct to Service School, Delco-Remy, or contact your local United Motors System distributor.

GENERAL MOTORS LEADS THE WAY—STARTING WITH

Delco-Remy
ELECTRICAL SYSTEMS

DELCO-REMY, DIVISION OF GENERAL MOTORS, ANDERSON, INDIANA



Only the most up-to-date testing equipment is used. Here a student adjusts a truck distributor on a testing machine.



Working with small groups, instructors are able to teach a great deal of automotive electricity in a short time.

Mid-Continent

Diesel News

By Jack F. Cozier

OILWELL Supply Co., Dallas, Tex., has bought two model 2031, 60 hp 2-71 GM diesel engines from Diesel Power Co., Oklahoma City, Okla., for export.

ANSON Offshore Drilling Co., Oklahoma City, Okla. & New Orleans, La., have taken delivery on an Alco three engine diesel electric offshore drilling rig power package which was ordered through Republic Supply Co., Oklahoma City and Continental-Emsco, Dallas, Tex. The six cylinder, 9 x 10½, 251-B models developing 900 hp each are an adaptation of regular locomotive equip-

ment engines and will be used on an Anson combination tender and offshore platform.

REFINERY Engineering Co., Tulsa, Okla., has taken delivery on a model 703-SC Lima crane powered by a series 6-71 GM diesel. The unit is now working at the Sunray-Mid Continent Refinery in West Tulsa and was sold by R.

A. Young & Son, Inc., Tulsa.

KERMAC Nuclear Fuels, Inc., Oklahoma City, Okla., purchased three Cat 350 kw D-397 diesel electric sets for their uranium mining operation in Grants, New Mexico, complete with switchgear and distribution system. The sale was made by Hoover Equipment Co., Oklahoma City.

DOLESE Brothers Co., Oklahoma City, Okla., has repowered at their Richards spur plant a model 605 1½ cu yd Koehring shovel with a model 6030-C, 195 hp, series 6-71 GM diesel from Diesel Power Co., Oklahoma City.

LUTHER Harper, pipe line contractor, Turley, Okla., is working on a line west of Ardmore, Okla. with an Insley model K-12 back hoe from Tulsa Equipment Co., Inc., Tulsa. The unit is powered with a Cat D311 diesel engine.

ARD DRILLING Co., Abilene, Tex., has in operation ten Cummins diesel engines with one rig utilizing three Cummins engines to power both pumps and drawworks.

GASO Pump & Burner Mfg. Co., Tulsa, Okla., bought a GM model 2031, 60 hp, series 2-71 diesel engine from Diesel Power Co., Tulsa, Okla.

AMERICAN Marine, New Orleans, La., completed installation of two Cat D-375 marine engines in a work boat for Ocean Drilling & Exploration Co., New Orleans. The units were purchased from Hoover Equipment Co., Oklahoma City, Okla.

ROOSEVELT Materials, Gotebo, Okla., purchased a model 900-RO-2 Chicago Pneumatic compressor powered by a model 3060 GM diesel engine. The unit to be used for quarry work was purchased from R. A. Young & Son, Inc., Tulsa, Okla.

F. M. REEVES & Sons, Inc., Odessa, Tex., is utilizing a Euclid 25 cu yd bottom dump truck powered by a Cummins NHS-6 diesel engine for processing sand, gravel and asphalt along with a Koehring model 1005 crane powered by a Cummins NHS-6 diesel engine. Other Reeves equipment include a Reo truck and a Northwest shovel both powered by Cummins diesels.

L. A. DAVIS, Cleveland, Okla., purchased an International model TD 14-142 diesel crawler tractor with bulldozer from Clarence L. Boyd Co., Inc., Tulsa, Okla. The tractor will be used for pipe line right of way work.

BETHLEHEM Supply Co., Tulsa, Okla., bought two model 2031, 60 hp,

REPORT FROM A LEADING MID-EASTERN RAILROAD

Air-Maze oil bath air filter cuts engine wear 45% in 31-month test!

A LEADING railroad's 31-month test of an Air-Maze oil bath filter shows how maintenance costs can be cut and life of power assemblies increased. This test, made on an Alco 1600 hp road switcher, illustrates why so many top-flight railroads have switched to Air-Maze oil bath filters for air intakes on diesels in freight, passenger and switching service.

Here are the facts on filter maintenance:

"Regular checks of oil level and dirt in filter bowls indicated that a 3-month period between oil changes was entirely adequate for diesel engine protection. Filter operated 5 months before initial oil change was required."

"Once-a-year cleaning of Air-Maze oil bath filters provided clean air with no evidence of dirt being carried into intake manifold."

Here are the facts on engine wear:

"One measured power assembly removed after 18 months—62,500 miles. Rings were free. Side clearance .008".

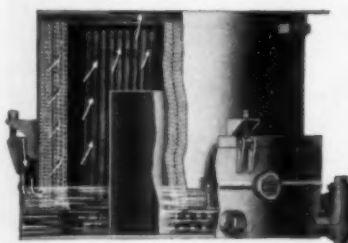
Piston and liner in excellent condition. Maximum liner wear per 100,000 miles—.0016".

Another power assembly removed at end of 31 months—141,827 miles. Ring side clearance—.016". Maximum liner wear per 100,000 miles—.0022" (.004" is considered normal).

Air-Maze oil bath filters cut diesel liner wear 45% during the 141,827 mile, 31-month test!

Panel filters formerly used on this railroad's switchers had to be cleaned weekly or bi-weekly. And with a loaded impingement type filter, dirt can jar loose, enter air intake and damage vital engine parts.

These facts about the Air-Maze oil bath filter's efficiency are equally important to railroad men. The oil bath filter is effective at all engine speeds—does not depend on high air velocity to do a top filtering job. (It works effectively with low pressure loss—is not affected by humidity or oil mist conditions.)



Extensive testing by an independent laboratory (selected not by us, but by one of our customers) brought this report: *Air-Maze oil bath filter removes 59% more fine Arizona road dust than the next best filtering device in use today.*

You can cut both filter and engine maintenance costs—and extend power assembly life. Now is the time to equip your diesel locomotives with Air-Maze oil bath filters. For further information, see your locomotive builder or write Air-Maze Corporation, Cleveland 28, Ohio.

Additional data furnished on request.

AIR-MAZE
The Filter Engineers



ENGINE AIR FILTERS • CAR BODY FILTERS • LUBE OIL FILTERS • PASSENGER CAR FILTERS

series 2-71 GM diesel engines for export from Diesel Power Co., Tulsa.

KERR McGee Oil Industries, Oklahoma City, Okla., purchased two D311 Cat diesel electric sets rated at 20 kw and two D-326 100 kw diesel electric sets from Hoover Equipment Co., Oklahoma City. The sets will be used on Kerr-McGee rigs in South America.

MUNICIPAL Transit Lines, Gulfport, Miss., is now using five Fitzjohn buses powered by Cummins diesel engines, two JN models and three JBS models. Municipal's route includes a 32 mile stretch of Gulf coast superhighway.

ROOSEVELT Materials, Gotebo, Okla., has purchased a type 34 Lima shovel using the power of a series 4-71 GM diesel engine for Roosevelt's quarry operations. The sale was made by R. A. Young & Son, Inc., Tulsa, Okla.

D. A. TATE Keota, Okla., bought an International model TD 14-142 diesel crawler tractor with bulldozer for land clearing work. The sale was completed through the Clarence L. Boyd Co., Inc., Tulsa, Okla.

BREWSTER-Bartle Offshore Co. is powering a rig with two Cat D-397 diesel electric sets rated at 350 kw each. The sets complete with switchgear and distribution panel were furnished by Hoover Equipment Co., Oklahoma City, Okla.

CITY of Durant, Okla., Waterworks, purchased through Sherman Machine and Iron Works, Oklahoma City, Okla., a Fairbanks, Morse pump powered by a model 62407RA, 230 continuous hp, series 6-110 GM diesel engine. The engine was furnished through Diesel Power Co., Oklahoma City.

A. E. OLIPHINT House Movers, Lubbock, Tex., now utilizes two Diamond T trucks both powered with Cummins diesel engines, one truck using a Cummins model NHB and the other a Cummins model NT-6B Turbodiesel.

Small Diesels For Reefers

The development of compact refrigeration systems is being done through the use of low horsepower, air-cooled diesel engines, products of American M.A.R.C. of Inglewood, Calif. W. Denis Kendall, president of American M.A.R.C. revealed recently that four concerns were presently engaged in production of prototype units for railroad refrigeration cars.

Prior to this new use for the 6½ hp to 18 hp diesels, almost the entire production of American M.A.R.C. diesels has gone to the U.S. Navy and Marine Corps, according to Mr. Kendall.

Literature on Damping Devices

A bibliography of the literature on damping devices for mechanical vibrations published between 1924 and August 1956 has been prepared by the Navy and released for industry use through the Office of Technical Services, U.S. Department of Commerce. The references cover studies of vibration damp-

ing by increasing mechanical impedance of the system, by energy dissipation, or by tuned attachments, and of vibration isolation by vibration dampers, connection damping, and material damping. The volume, PB 121299 *Devices for Damping Mechanical Vibrations, A bibliography*, M. Benton, Naval Research Laboratory, Dec. 1956, may be ordered from OTS, U.S. Department of Com-

merce, Washington, D.C. It contains 101 pages, \$2.75.

It's one thing to kinda analyze lube oil condition with your shining new test kit, find it full of acid and carbon, and it's something else again to maintain clean combustion and get rid of the whole sorry mess via the exhaust pipe.

**POWERED BY
FAIRBANKS-MORSE
O-P DIESELS**

World's Most Powerful Railroad Tug

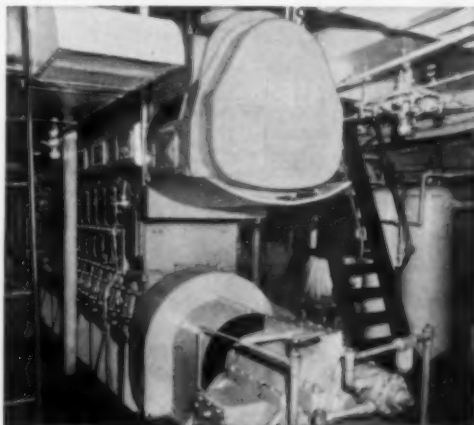
The New Haven's Dalzell I has everything needed to make it the most modern and powerful tug in railroad harbor service. Her 1800 hp. marine Opposed-Piston engine gives her a top speed in excess of 13 knots. She can be brought to a crash stop from top speed in just 18 seconds.

This is the kind of responsive power needed to handle freight car floats in the swift tides and high winds of New York Harbor—and maintain railroad timetable schedules.

Power. Speed. Maneuverability. Proved low maintenance. That is the record established by more than 6,000,000 installed horsepower of marine Opposed-Piston diesels in all classes of vessels. See what an O-P from 200 to 2400 hp. could do for your boat, write: Fairbanks, Morse & Co., Dept. DP-9, Chicago 5, Illinois. Ask for Bulletin AOB 355.3.



Responsive power and plenty of it is required to handle these car floats in the swift tides and tricky channels of New York Harbor.



1800 O-P horsepower occupies no more space than many engines of much smaller power. This compact design means that the dimensions of the tug are no larger than similar vessels of lesser power.



Dalzell I, designed by Thomas D. Bowes, M.A., built by RTC Shipbuilding Corp., powered by an F-M 1800 hp. O-P marine diesel.



FAIRBANKS-MORSE

a name worth remembering when you want the BEST

DIESEL AND DUAL FUEL ENGINES • DIESEL LOCOMOTIVES • RAIL CARS • ELECTRICAL MACHINERY • PUMPS • SCALES • HOME WATER SERVICE EQUIPMENT

Inland River Reports

By A. D. Burroughs

THE ROSTER of new inland river vessels increased again this month with the all-steel *Ernest Mack* completed by M and M Towing Company. Measuring 64 by 23 ft, she is operated by Gordon Kent and the McAlexander brothers;

power is provided by twin Caterpillar engines rated at 325 hp each. Service is planned for Tennessee river duty.

FLAGS, fanfare, and senators sent the brand new 160 by 35 ft *Philip Sporn* into service for the American Barge Lines. Built by Jeffersonville Boat and Machine Company, propulsion power comes from two 16-cyl. GM Cleveland

Model 16-567C engines, each rated at 1640 hp at 800 rpm.

A CUMMINS engine, model JNS, rated at 125 hp powers the single-screw towboat, *Braze*. Built by Barbour Metal Boat Works, Mo.; service will be performed in Venezuela.

VALLEY VOYAGER is the selected tag

for the new Mississippi Valley Barge Line towboat. Still under construction at Dravo, the 200 by 45 ft craft will have a total 4200 hp delivered by Nordberg engines.

IN Louisiana, the American Marine Corp. has been making trial runs on a series of offshore supply vessels being constructed for Tidewater Marine Service. The vessels are powered with four GM's, rated at 600 hp each. *Burch Tide* and *Don Tide* are the two now in service.

THE Atchafalaya yard of A. W. and E. R. Dupont, near Morgan City, reports completion of the 87 ft combination cargo-personnel craft for Blue Chip Marine Corp. Named *Miss Dupont*, two 300 hp GM Detroit engines supply the propulsion power.

THE twin-screw *Clara U. Slepiski*, constructed by owner Alex J. Slepiski, Pittsburgh, and completed by Dravo measures 54 ft in length with the 450 hp supplied from two Gray marine diesel engines.

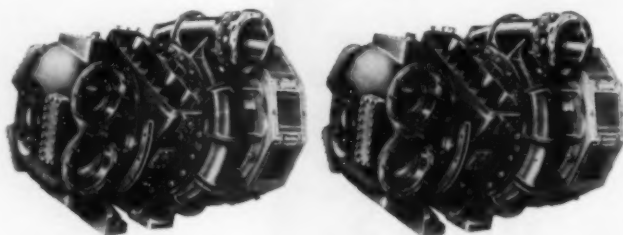
FROM name to engine room to power performance, the new *Toltec* continues to add admirers. Completed by Nashville Bridge Co. for Indian River Lines, the engine room is equipped with three Enterprise turbocharged DNQ-36 engines with full pilothouse control.

THE HANSEN Dreijer Marine Enterprises, Mobile, Ala., has purchased the popular steel tug, *Lee LaFerne*, from a Houston firm, Harry V. Baker and Company. Constructed in 1940, measuring 60.2 by 18.1 ft, her dependable propulsion power comes from a couple of Buda Allis-Chalmers supercharged engines rated at 212 hp each.

THE *Pegasus* turned the heads of inland river folks when this single-screw towboat routed from West Memphis, Ark., to Goodhope, La., with a tow of four nine thousand barrel oil barges, making the trip in fifty hours. Owned by Pan-Gulf Towing Company, New Orleans, the craft has had a power boost from 900 hp to 1600 hp with the installation of a GM 16-278A diesel.

WE WATCHED an old favorite, the *Robert R. Gipson* upbound on the Illinois River with a good size tow of gasoline and oil, making good time with power from twin GM 12-567's, for the total 1800 hp.

COOPER-Bessemer JS-8 power, a total 810 hp at 450 rpm, was in good stead serving the *Harry Simpson Jr.*, downriver with all-empty tows. Built by Nashville Bridge in 1943, owned by Simpson Towing Co., Charleston, Mo., this tow-

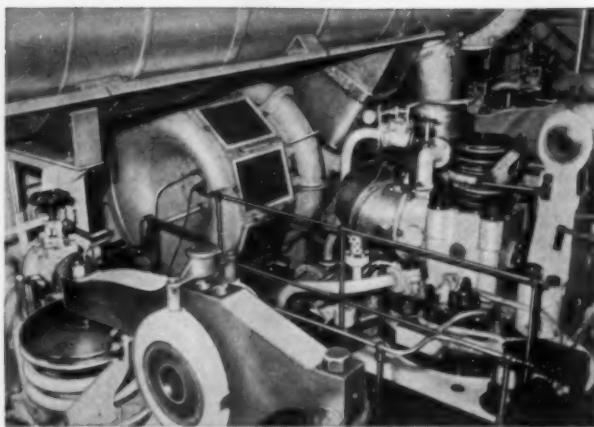


These Napier Turbo-blowers were chosen

Two Napier Type MS 600 turbo-blowers are fitted to the Burmeister & Wain 6-cylinder single-acting two-stroke diesel engine which powers the Compagnie Maritime Belge (Lloyd Royal) M.V. LUSAMBO. This Burmeister & Wain engine was made under licence by S. A. Cockerill and Ougrée in Belgium. The ship is one of three which have Burmeister engines with Napier turbo-blowers. Why were Napier turbo-blowers chosen? Here are three good reasons:

- Napier blowers have high adiabatic efficiency, resulting in maximum power increase and low fuel consumption.
- Journal bearings on the MS 500 and 600 Napier blowers are sleeve type, and with proper lubrication they will last as long as the engine itself. The MS 500 and 600, the largest blowers in the Napier range, are built especially for marine applications.
- A high standard of workmanship is guaranteed by Napier's long experience in precision engineering.

Napier turbo-blowers are available in seven sizes for engines of 140-4,000 h.p. afloat and ashore. Multiple installations for engines of higher powers. On 4-stroke diesels they can double the power, on 2-strokes they increase it by over 30%—often at a lower specific consumption. Napier turbo-blowers are currently in use in 84 countries.



for this engine



which powers this ship

NAPIER Turbo-blowers

D. NAPIER AND SON LIMITED • LONDON • W. 3. • ENGLAND

Representative: L. O. Brooks, 909 Dupont Circle Bldg., 1346 Connecticut Ave. N.W., Washington 6, D.C. Phone: North 7-0146

CRC 114

boat has been one of the "regulars" on inland waters.

THE *Titan* was active in the heavy Ohio coal traffic using the power developed from her Superior engines rated at a total of 1400 hp. Owned by Jones and Laughlin Steel Corp., built by St. Louis Ship in 1953, this four-year-old towboat measures 116 by 27 ft.

TWO Fairbanks-Morse engines, total 3200 hp, were doing the effective push power for the *Delta Cities* upriver on the Mississippi. The engine performance for this towboat has been collecting admirers since completion at St. Louis Ship in 1951.

THE powerful *Lachlan Macleay* was using its 3600 hp from the four GM engines to push a big tow of linseed oil downstream on the Mississippi. Owned by Federal Barge Lines, this 1955 production of St. Louis Shipbuilding and Steel Co., has gained much acclaim for its Missouri River service design.

De Laval Appoints New Sales Manager

The appointment of Michael Toth as Manager of Turbocharger Sales was announced today by H. G. Bauer, Vice President, De Laval Steam Turbine Company, Trenton, New Jersey. Prior to this appointment he was serving as Acting Manager of Turbocharger Sales since February 1957. Mr. Toth joined De Laval in 1949.

New Thermometer Series

The Wheelco Instruments Division of the Barber-Colman Company announces a new thermometer series. Included are Recorders, Recorder-Controllers, Indicators and Indicator-Controllers. Wheelco 4000 Series Recorders and Recorder-Controllers use large 12 in. easy-to-read charts. Uniform accuracy over the entire scale is assured by the use of mercury-actuated sensing elements. These elements offer maximum stability over wide ranges of temperatures. Finely built Bourdon coils, friction-free pen arms and Invar metallic compensation for the instrument cases, makes the 4000 Series outstanding in their smooth operation and dependable performance.

Recorder-Controllers (single pen) are available in a variety of control forms and use plug-in type control chassis. Wheelco Thermotrol Temperature Indicators and Indicator-Controllers incorporate all of the many fine construction features of the 4000 Series. The attractively designed indicator scale is approximately 7½ in. long with black screened figures and graduations on a white background. The set point and

controlled variable are both indicated. Indicator-Controllers use plug-in type chassis and are available in the same control forms as the Round Chart Recorder-Controllers.

ITS NEW

Schwitzer-Holset Agreement

The Schwitzer Corporation, Indianapolis, Indiana, announces that an agree-

ment has been concluded with the Holset Engineering Company, Ltd., Turnbridge, Huddersfield, England, to manufacture, sell and service Non-Bonded Rubber Vibration Dampers, and a range of Turbochargers; both of Schwitzer design as currently supplied to American industry. Both product lines are available immediately from the Holset Company.

NOW AVAILABLE! The Brand New **DIESEL ENGINE CATALOG**, Volume 22. This giant, 400 page, 10½" x 13½", fully illustrated reference book containing complete and detailed engine and accessory sections is the biggest and best yet. Mail orders are now being filled for this "Bible of the Industry," which has been revised, rewritten and brought up to date completely from cover to cover. Send your order in now for this limited edition, which costs \$10 postpaid plus California sales tax where applicable. Send checks or company orders to **DIESEL PROGRESS**, 816 N. La Cienega Blvd., Los Angeles 46, Calif.



Photo courtesy of General Dynamics Corp.

When the *Skate*, U. S. Navy's newest atomic submarine, slid down the ways, she was equipped with Fulflo Filters.

When you need dependable micronic filtration, you, too, can rely on Fulflo Filters. They are engineered to your exact requirements — for all types of industrial fluids: oils; liquid chemicals; water; liquid

fuels; lacquers, paints, thinners; compressed air, CO₂ and other gases. Standard models meet all normal operating conditions. Special filters can be engineered for full-flow filtration up to 2000 gpm or pressures as high as 5000 psi, at minimum pressure drop. Wide variety of filter elements and containers is available.

Call on Commercial for dependable micronic filtration. For technical literature or engineering assistance, address Department DS.

Micro-Fine Filtration for Low Cost Clarity



COMMERCIAL FILTERS CORPORATION

MELROSE 76, MASSACHUSETTS
Plants in Melrose, Massachusetts and Lebanon, Indiana

FULFLO FILTERS WITH GENUINE HONEYCOMB FILTER TUBES FOR CONTROLLED MICRONIC CLARITY • CFC MULTI-CARTRIDGE OIL FILTERS
PURIVAC INSULATING OIL CONDITIONERS • DRI-PURE WATER-OIL SEPARATORS • PRE-COAT FILTERS • MAGNETIC SEPARATORS
AUTOMATIC TUBULAR CONVEYORS • COOLANT CLARIFIERS

Florida Diesel News

By Ed Dennis

THE showcase of Florida's giant marine industry opened recently. Planned as a permanent exhibit of marine products and located on the Miami River, the Florida Marine Bureau has over 60 displays covering some 10,000 sq ft of floor

space. Some of the exhibitors are J. Frank Knorr & Co. for Allis-Chalmers diesels, Merrill Stevens with Murphy diesels, Shelley Tractor and Equipment Co. for Caterpillar and the Detroit Diesel Division of General Motors.

A MODEL DA66A3X Allis-Chalmers diesel generating unit was installed and engineered by the Peninsular Armature

Works at the Homestead Air Force Base. Specifications included a model 6DAG779 Buda diesel rated 128 max. hp at 1200 rpm. The generator is rated 60 kw 120-240 volt and the installation also included a switchboard.

A THIRD gulf tuna vessel joined the fleet out of Pascagoula. The 110 ft *Alf-hild* teamed up with the *Milmar* and

Sirocco on the newly discovered deep water tuna grounds in the gulf. The boats are powered with 2 GM 6-71 diesels; each are rated 165 hp and have Snow-Nabstedt 4.5:1 r&r gears. Other equipment includes a GM 2-71 20 kw and a Hercules 15 kw diesel generating unit and a 7.5 ton Carrier Freon refrigeration unit.

SHELLEY Tractor & Equipment Co. installed the standby model D337 Caterpillar diesel generating set with a Cat 150 kw generator for television station WCKT.

A MODEL 6W14 Worthington diesel was recently installed at the City of Miami's Alexander Orr Jr. water plant. Weighing 30 tons the 1500 hp diesel drives a Worthington pump rated thirty million gallons per day.

TEN Cummins dieselized Gresco generating sets are used for starting the Jet airplanes at the Homestead Air Force Base. A model NHRIS 6 cyl Cummins, rated 190 cont hp at 1800 rpm, is the main source of power. The Allis-Chalmers generators are rated 30 to 150 kw; 220-240 volt and 440-480 volt, 0.8 pf.

TEN new dieselized shrimp trawlers were recently launched by Diesel Engine Sales at St. Augustine. Six of the 67 footers were equipped with D342 Caterpillars from the Gibbs Corp. at Jacksonville, two had Murphy diesels and the two 62 footers had GM 6-71 diesels. Many more are in various stages of construction to compliment the \$25,000,000 Florida fishing industry.

THE NEW Michigan dozer and scoop that R. H. Wright Contracting Co. has on the Palmetto Expressway job is said to be the largest in Florida. It is powered with a model NRT6BI Cummins diesel rated 300 hp at 2100 rpm. The 6 yd bucket is 12 ft wide and packs a lot of dirt.

TWO Mercedes-Benz diesels replaced gasoline engines on Clark Daniels' *Algal*. The engines have a cont hp of 94. The installation also included Capitol 2:1 hydraulic r&r gears and was engineered and sold by Arthur Hamm of Miami.

A 10 CYL Fairbanks-Morse diesel generating set was sold to Southern Bell Telephone & Telegraph Co. at Columbia, South Carolina. The model 38F5 $\frac{1}{4}$ diesel is rated 750 hp.

THE 108 ft *Dr. William C. Quinn* is the latest menhaden fishing vessel to join the gulf fishing fleet. The new vessel has two GM 6-110's. The r&r gears are Falk 4.5:1 and a Petter diesel drives a Quincy air compressor.

Two more Turbocharged 2-cycle Cleveland Diesels go into service

Most powerful tug in offshore drilling service

Brown & Root's Cleveland Diesel-Electric-powered

M. P. ANDERSON

The 2400-shaft-horsepower Diesel-Electric tug, M. P. ANDERSON, operated by Brown & Root Marine Operators, Inc., is the most powerful tug in the United States engaged in offshore drilling service.

Powered by two 8-cylinder Model 498 Turbocharged 2-cycle Cleveland Diesel engines driving electric-propulsion generators, this 123-foot tug hauls 200-ton drilling platforms to offshore locations on the Gulf Coast, and handles other heavy towing assignments.

For the finest work-boat propulsion machinery in the world pick the Cleveland Diesel Turbocharged 2-cycle Diesel engines with Diesel-Electric drive.



Designed by Brown & Root, Inc.
Built by Gulfport Shipbuilding Company,
Port Arthur, Texas.



A GOOD PRODUCT PLUS GOOD SERVICE GIVES TOP PERFORMANCE

CLEVELAND DIESEL

An Engine Division of General Motors • Cleveland 11, Ohio

SALES AND SERVICE OFFICES:

Boston, Mass., 9 Commercial Ave.
Cambridge, Mass. Tel.: Eliot 4-7891
Chicago, Ill., 216 West Potomac Ave.
Lombard, Ill. Tel.: Randolph 6-9214

Dallas, Texas, 9404 Waterview Road
Tel.: Fairdale 2403

Houston, Texas, 1 Main Street
Tel.: Capitol 7-3770

New Orleans, La., 727 Baronne St.
Tel.: Magnolia 6761

New York, N. Y., 10 East 40th Street
Tel.: Murray Hill 3-4372

Norfolk, Va., 554 Front Street
Tel.: Madison 2-7147

Pittsburgh, Pa., 469 Marlin Drive
Tel.: Locust 1-2173

Portland, Ore., 3676 S. E. Martins St.
Tel.: Prospect 1-7509

St. Louis, Mo., 2 N. Wharf St.
Tel.: Main 1-0642

San Diego, Calif., 3886 Sequoia Street
Tel.: Broadway 3-1752

San Francisco, Calif., 870 Harrison St.
Tel.: Douglas 2-1931

Seattle, Wash., 4300 11th Avenue, N.W.
Tel.: Hemlock 9000

Wilmington, Calif., 433 Marine
Avenue. Tel.: Terminal 4-4098

AT Ft. Lauderdale, the Yelvington Excavating Co. took delivery of a #71 Bay City crane powered with an NRBIS 600 Cummins diesel which has a cont hp rating of 168 at 1800 rpm.

FOR THE Florida Flood Control Commission at Belle Glade, a model DTA 55A3 Allis-Chalmers diesel generating set rated 55 kw and powered with a 468 Buda diesel engine for use on the flood control project.

IT IS gratifying to hear of the formation of the *Sea Ryder Service*, operating out of Jacksonville to Puerto Rico. Ryder Systems Inc., which also includes Southern Trucking Co., is one of the largest trucking concerns in the country. The 327 ft *M. V. Ponce*, a twin screw dieselized vessel, carried 25 refrigerated trailers on deck the first southbound trip under the Ryder flag.

MANAGUA, Nicaragua bound, on the freighter *El Salvador*, was a 40 x 10 portable dredge constructed by Diesel Shipbuilding Co. at Jacksonville. The dredge has for power a twin GM 6-71 diesel with a hp of 290 at 1800 rpm to drive the 10 x 8 Georgia Iron Works pump. The auxiliary is a GM 2-71 with Falk r&r gears for the cutter head. H. K. Ferguson Contracting Co. are the new owners.

THE NARANJA Rock Co., Naranja, took delivery of a Hough Payloader tractor shovel powered with an Allison Torqmatic drive and a model JN6BI Cummins diesel. This 4 1/4 x 5 six cyl engine develops 125 max. hp at 2500 rpm. A similar piece of equipment was sold to Fern Crest Quarries of Ft. Lauderdale. Both were delivered by Florida Georgia Tractor Co.

THREE General Motors diesel engines provide power for the air compressors being used for dynamite work in the construction of levee #5. Two 6-71's provide power for the #600 Gardner-Denver air compressor while a 6-110 is used with a #900 Chicago Pneumatic air compressor. This job will involve removal of 1,500,000 cu yds of rocky material from a borrow canal to build 2 parallel levees for flood control work.

AN HD16 Allis-Chalmers bulldozer with torque converter and hydraulic controls and a 6 cyl Buda diesel was delivered to R. H. Wright Contracting Co. of Ft. Lauderdale by the Square Deal Machinery Co.

FROM Kingsport, Tenn., to Miami International Airport, the Robinson Transfer Motor Lines uses a GM 4-71 dieselized highway tractor to pull a 5400 gallon hi-way tanker with methanol alcohol. These tractors have a 6 speed

transmission, 2 speed axle and Bendix Westinghouse air compressors, get 5 miles to the gal. of fuel oil. It takes 24 hours for the trip and they have 20 in the fleet.

UD16 International diesel engines having a horsepower rating of 100 at 1800 rpm are installed in the two #118 Galion motor graders that Troup Bros.

received from Florida-Georgia Tractor Company.

Folder On Test Stands

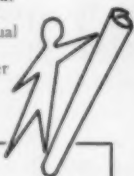
A new folder describing their Universal Test Stands for Diesel fuel injection systems has been issued by Diesel Control Corp., Wilmington, Calif. The Model U-4500 Unitest Stand is des-

cribed and illustrated testing and calibrating the popular makes of fuel pumps and injectors commonly used by trucking, railway, petroleum and marine operators. A feature of the Model U-4500 is its versatility and the ease with which pumps and injectors of various makes can be set up for calibration and testing, by the use of standard fixtures supplied by Diesel Control Corp.

Get longer life, more power from RAILWAY DIESELS...with a HOUDAILLE

TORSIONAL VIBRATION DAMPER

• HOUDAILLE ENGINEERS are at your service in designing a viscous vibration damper to meet the individual requirements of any engine, large or small. Write Dept. MR for further information and full details of performance and installation.



**HOUDAILLE
FRICTION SNUBBERS**

are designed for use on freight and passenger car trucks to control excess vertical movement and help protect lading on uneven tracks and curves.



**HOUDAILLE
ROTARY
SHOCK ABSORBERS**

are found on America's smoothest-riding railroad passenger cars. Engineered and built to outlast and outperform linear-type shock absorbers. External valve adjustment—easy to service without dismounting.



SIMPLE IN DESIGN... with only three essential parts... the Houdaille Torsional Vibration Damper is outstanding in performance and durability.

- ← **A** Inertia mass or flywheel
- ← **B** High viscosity synthetic fluid
- ← **C** Hermetically sealed housing

THE SHEARING ACTION of highly viscous fluid, used exclusively in the Houdaille damper, is unequalled for reducing torsional vibration in the crankshafts of diesel engines. Because Houdaille's Torsional Vibration Damper is a true damper, not a detuning device, it is equally effective across the full range of engine criticals. In addition, it permits manufacturers of diesel and gasoline engines to design for increased speed and horsepower. For railroads and other users of high-performance engines, it means smoother performance and less maintenance.

HOUDAILLE INDUSTRIES, INC.

BUFFALO HYDRAULICS DIVISION

537 East Delavan Avenue • Buffalo 11, N. Y.

Your best source for railway ride-control and vibration-control devices

AIRESEARCH TURBOCHARGERS ANSWER "YES!" TO...

increased power?

Your engine's output can be raised up to 100%, depending on its design and application. Incorporating the most efficient turbine wheels in the industry, AiResearch turbochargers can give sea-level performance up to 12,000 feet.

lower specific fuel consumption?

The turbocharger improves engine combustion, resulting in important fuel saving per horsepower even with greatly increased engine power output.

lower engine thermal loading?

Efficient compressor wheel design holds heat-producing turbulence to a minimum, providing a smooth flow of compressed air to the engine. AiResearch turbochargers are also air-cooled, eliminating the need for complicated plumbing.

less noise and smoke?

Engine noise level is greatly decreased. Smoking is often completely eliminated.

reliability and durability?

Excellent reports on more than 13,000 AiResearch units at work in the field emphasize these qualities. AiResearch turbochargers require no attention between normal engine overhaul periods.

Your inquiries are invited.

BASIC SPECIFICATIONS FOR AIRESEARCH TURBOCHARGERS

MODEL	F-51	C-60	A-60	E-100	B-100
Output — lb/min. (Standard Conditions)	29-51	30-60	38-60	50-100	60-100
Diameter — in. nom.	10.0	11.5	15.25	15.1	15.4
Length — in.	10.5	12.9	16.75	14.7	17.1
Weight — lb.	40.0	95.0	125.0	112.0	135.0



AiResearch Industrial Division
9225 South Aviation Blvd., Los Angeles 45, California

DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND SPECIALIZED INDUSTRIAL PRODUCTS

VERO BEACH, FLORIDA

**Three Big Nordberg Engines, Installed in Five Years,
Quintuple Municipal Power Plant Capacity as
Florida City Attracts Permanent Residents, Vacationers.**

By CHARLES C. JEWETT*

A CAPACITY increase of 500% within the past five years is the current rate of expansion at our municipal power plant in Vero Beach, Florida. A picturesque, little Atlantic coast city, it has recently enjoyed a spectacular growth in population. The required plant expansion has been achieved by the installation of three Nordberg diesel engines with a combined capacity of 16,100 hp. Vero Beach has grown steadily and solidly through periods of boom and bust, depending not alone on the vacation trade but on the production and processing of premium agricultural products. Located 73 miles north of Palm Beach, Vero Beach has much to offer the pleasure-seeking visitor—winter temperatures that average 65.8 degrees; three miles of ocean beaches; salt and fresh water fishing; golf courses; parks and comfortable tourist accommodations. In the spring, Vero Beach is the center of the universe to millions of sports fans, while serving as the training base for the Brooklyn Dodgers. The average summer temperature is a moderate 80.7 degrees. In addition, there are many business opportunities which are attracting permanent residents. Vero Beach is the county seat and largest city in Indian River County, a famous citrus section. It is not only the shopping center for the area but an important packing and shipping center for agricultural products.

The city was incorporated in 1919 when it boasted a population of about 500 permanent residents. During the Florida real estate boom of the 20's, the population rose to 2,268 and surprisingly, continued to grow slowly through the depression years. At the start of World War II, a city of more than 3,000 greeted the Navy when it took over the municipal airport and 2,000 acres of land for a \$6,000,000 air training base. (These facilities later were turned over to the City and it is a portion of this former base which has been leased to the Brooklyn Baseball Club.) By 1950, there were 4,746 permanent residents and the rate of growth began to curve sharply upward. The year 1955 found 7,630 residents within the City limits and a total of 10,920 served by the electric system. An additional 3,000 people are served during the winter tourist season. The City acquired a 35 kw power plant in 1919 but soon found it inadequate. The original units were supplanted in 1920 and '23 by 71 kw and 212 kw prime movers respectively, and they in turn were replaced with a 525 kw air-injection diesel in 1926 and a 753 kw diesel in 1937. These two units met the city's needs for ten years and are still in service.

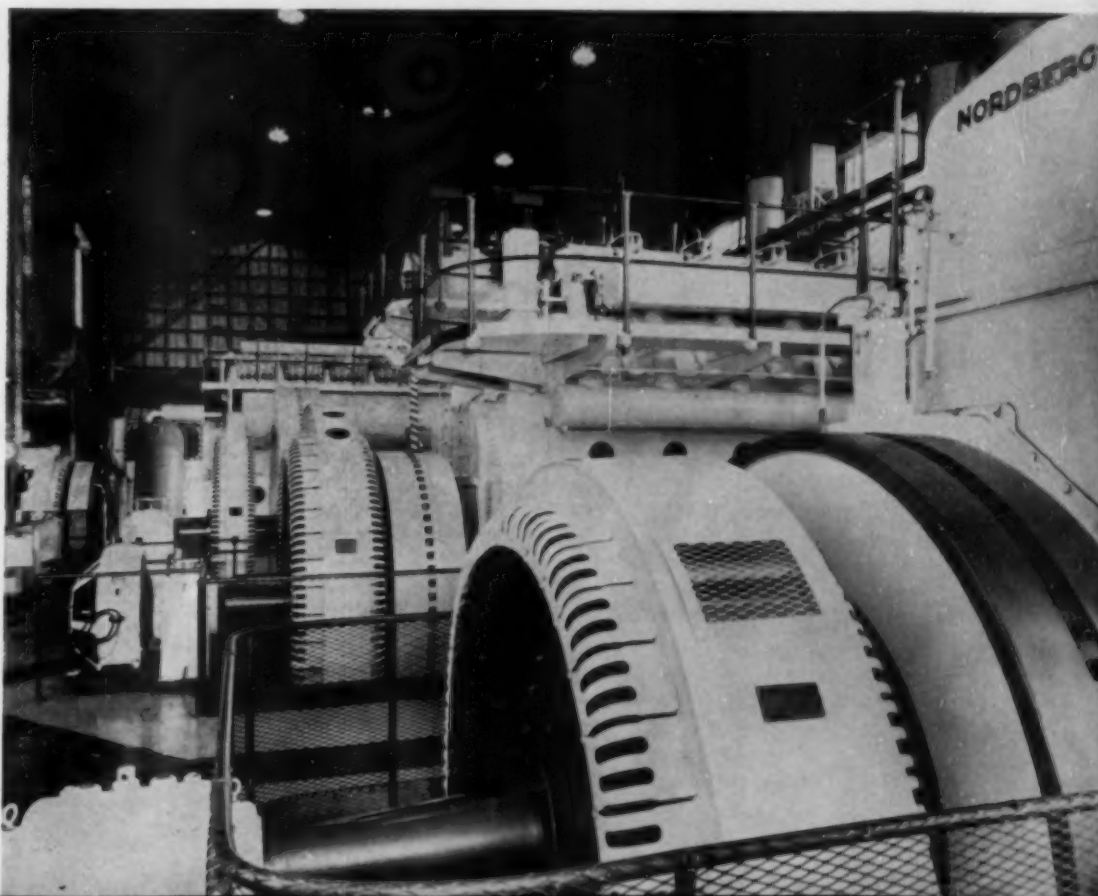
The postwar era marked the end of the city's leisurely expansion. In 1947, Vero Beach selected

and purchased its first Nordberg engine, a four-cycle supercharged diesel which drives an 1150 kw generator. In just three years, peak loads reached plant capacity and the City had to purchase power to meet the demand. A 4050 hp (2875 kw) Nordberg Diesel was ordered, but before this was ready, Nordberg was able to meet the emergency by diverting to Vero Beach a 4500 hp engine. The two-cycle, 10 cylinder Nordberg diesel of 21½ in. bore and 31 in. stroke was placed in operation in 1952 and drives a 3200 kw Elliott generator. The following year, the originally ordered 9 cylinder Nordberg diesel was put into service, adding another 2875 kw to plant capacity. This too was a two-cycle, 21½ in. x 31 in. diesel, which turns its Elliott generator at 225 rpm. For the first time in years, the City had the protection of firm capacity. However, peak loads seemed to climb almost straight up and even the addition of two engines, with combined capacity of 6075 kw, would not meet the demand for long. As a result of studies by Consulting Engineer Harry W. Damerow, it was decided to purchase an even more powerful prime mover. Another two-cycle Nordberg diesel was selected and installation of the big engine was completed during this summer.

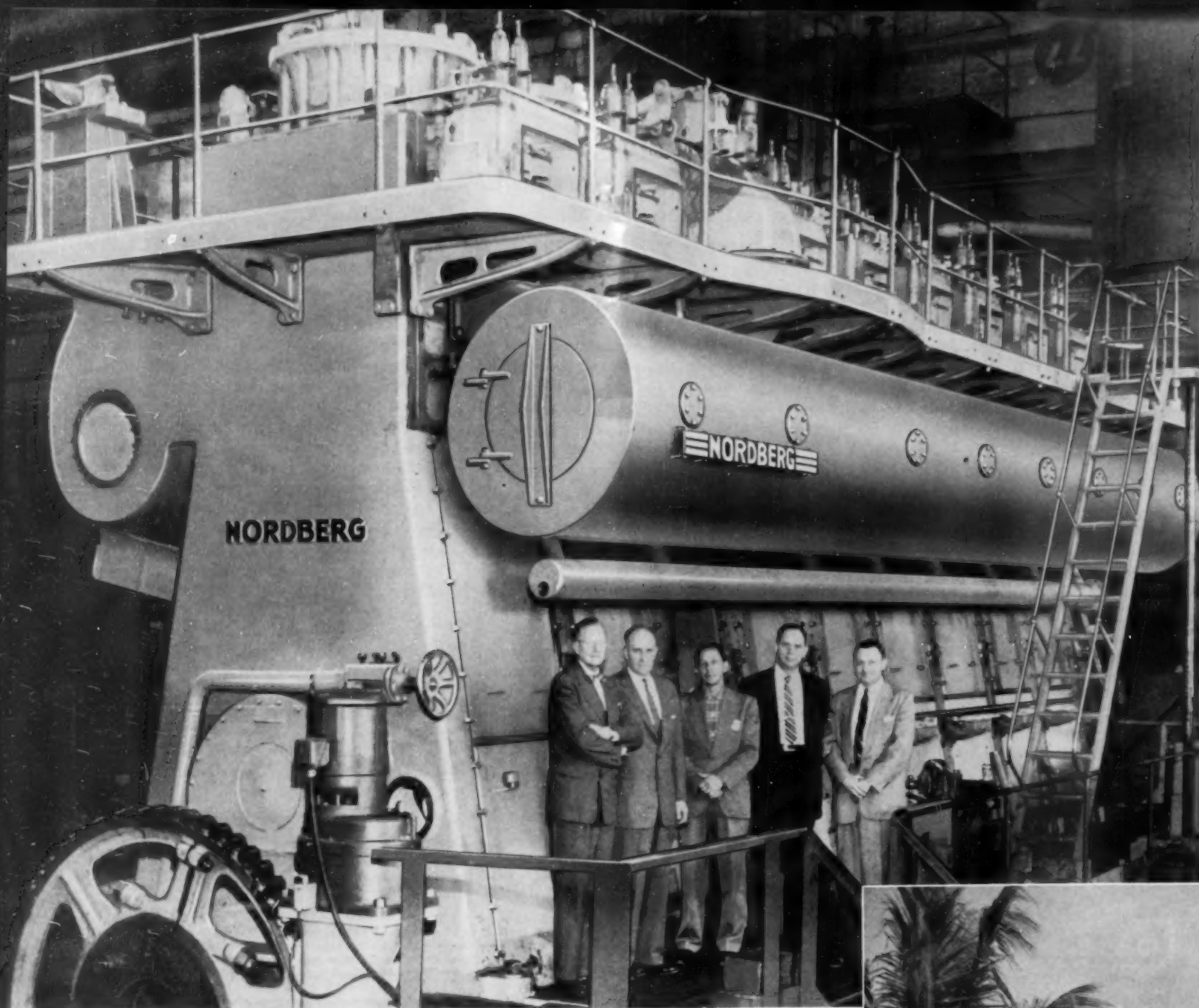
The new engine has 8 cylinders of 29 in. bore and

40 in. stroke and is rated 7550 bhp at 189 rpm. It will operate on diesel fuel until natural gas becomes available in Vero Beach and then will be converted to a Dualfuel unit. Conversion will be simplified at a later date since Nordberg incorporated certain Dualfuel components in the oil engine. The major items include: Dualfuel type cylinder heads; actuator cams for gas operation; basic fuel pump supports for the gas actuator pumps; regulating shafts and engine controls for Dualfuel operation; special check valves for the starting air header; a high output governor, with a synchronous reluctance motor drive; and controls on the engine gauge board for Dualfuel operation. When put on the line, it will drive a 5400 kw Elliott generator and will raise total plant capacity to 13,925 kw, more than five times the 2450 kw capacity of just five years ago. This phenomenal expansion has taken place without placing any burden on the taxpayers of Vero Beach. Not only are all capital expenditures financed by plant revenue bonds, but the electric department continues to transfer substantial profits to the City general fund. Table I shows that in the fiscal year ended June 30, 1956, the Electric Department had gross revenues totaling \$707,966.02 and a net revenue of \$322,249.07. As recently as three years ago, the gross revenue was only \$447,282.00 with a

The well maintained Vero Beach plant is chock-full of power, from the 1630 hp four-cycle Nordberg at right to the two big two-cycle Nordberg engines at the far end of the plant. The far wall was being taken down when this picture was taken to permit installation of the plant's fourth and biggest Nordberg diesel engine, rated 7550 hp.



*City Manager, Vero Beach, Florida



Charles Jewett, Vero Beach City Manager; L. L. Peterson, Manager Utility Sales, Nordberg; Fred Gossett, Vero Beach Power Plant Superintendent; Robert Cramer, Chief, Technical Engineering, Nordberg; and M. Roesser, Assistant Manager, Utility Sales, Nordberg, pause during their inspection of the new 8 cylinder, 29 in. bore engine as it was being assembled in Nordberg's Milwaukee plant this spring.

net revenue of \$169,928.00, little more than half the 1956 figure. Due to the accelerated growth of the City and the increased kilowatt hour use per family, the City Officials figure, conservatively, that net revenue will top \$500,000 a year by 1962.

Kilowatt hour production topped 10,000,000 for the first time in 1952, while in fiscal 1956, plant production was up to 22,915,903 kwhs. The three Nordberg engines then in service produced 21,759,925 kwhs, or 94.9 per cent of the plant total. The 4500 hp diesel was the base load engine, producing 10,629,000 kwhs. The 4050 hp unit generated 8,500,650 kwhs and the smaller 1630 hp engine, another 2,630,275 kwhs. The 29 in. bore engine now installed, will take over base load service, but load expansion continues to be so rapid that the other Nordberg engines are expected to be operated at continued high production rates. In addition to being the production leader of the plant in the last fiscal year, the 4500 hp engine was also the efficiency leader with an average of 13.54 kwhs

per gallon of fuel at an average load of just 63 per cent. Average for the entire plant was a respectable 13.1 kwhs per gal. The 10 cylinder engine was sparing, too, in consumption of lubricating oil, operating 6835 rated horsepower hours per gallon of lube. The other Nordberg engines also showed good lube economy with 5857 and 5665 hp hrs/gal. respectively. Table II gives further performance figures for the year.

The municipal power plant is operated with care and efficiency under the direction of Superintendent Fred Gossett. Pressure for economy is great since this plant uses a relatively expensive fuel, a distillate oil costing 11.65 cents a gallon. Installation of two 25,000 gal. tanks in 1956 more than doubled fuel storage capacity. All fuel is passed through a 17-element cellulose filter which removes particles down to two microns. An additive is put into each truckload of fuel before unloading and is credited with helping to keep injectors clean. Injectors are in service a full year on the



TABLE I

Earnings and Expense Report
Fiscal Year Ended June 30, 1956

Sale of Electricity	\$ 695,139.86
Other Revenue	12,826.16
Total Revenue	\$ 707,966.02
Production Expense	\$ 279,252.14
Distribution	48,900.52
Customer Accounting & Collection ..	15,649.20
Administrative & General	36,360.35
Transportation	3,690.59
Total Operating Expense	\$ 383,852.80
Non-Operating Expense	1,864.15
	\$ 385,716.95
Net Revenue	\$ 322,249.07
Transferred to:	
Capital expenditure	\$ 27,545.42
Sinking Fund	83,714.34
Renewal & Replacement Fund	111,665.00
City General Fund	52,071.44
Retained in Electric Dept.	47,252.87

4500 hp Nordberg engine without change. In a plant where peak load has so often been above firm capacity, it becomes imperative to keep engines in peak operating condition with a meticulous preventive maintenance program. Superintendent Gossett and the plant operating staff do all their maintenance and keep complete records. There is a separate card for each piston, bearing, cylinder liner or other major wearing part. It lists

TABLE II

Engine Performance Report
Fiscal Year Ended June 30, 1956

Nordberg Engine	Engine Hours	Kwhs Generated	% Plant Total	Gal. Fuel Consumed	Kwhs Per Gal. Fuel	Gals. Lube	Hp Hrs. Per Gal. Lube
4500 hp	5,234	10,629,000	46.3	784,699	13.5	3,446	6835
4050 hp	4,638	8,500,650	37.1	674,413	12.6	3,207	5857
1630 hp	3,615	2,630,275	11.5	197,196	13.3	1,040	5665
Total Nordberg	13,487	21,759,925	94.9	1,656,308	13.1	7,693	6250
Total Plant		22,915,903		1,748,384	13.1	9,437	

the make of the part, measurements, work done, time spent, personnel making repairs, and condition of the part. To increase personal interest in the work, each operator has the primary responsibility for one engine. The appearance and performance of the power plant show that this policy pays off.

Scheduled inspections show that pistons are clean after as much as 10,000 hours and that liner and bearing wear are very low. Mr. Gossett believes that careful attention to lubrication helps to achieve these excellent results. A detergent-type oil is used in the cylinders and a straight mineral oil in the crankcases of the two-cycle diesels. Further additives are put in at the plant. Each two-cycle engine is served by a 20-element activated clay filter to remove impurities and acids from the oil. In addition, the plant uses a batch reclaimer to correct dilution. To insure a good film

of oil on cylinder liners before an engine is called on to carry load, Mr. Gossett instructs operators to start up a motor-driven lube pump and turn the engine over for about 5 minutes with the barring motor before starting a big diesel. There is one operator and an oiler on each shift, with the oiler, in effect, an apprentice operator.

The City has striven to even out the load as much as possible and has succeeded in filling in summer valleys to some extent with air conditioning load. But the winter peaks grow as fast or faster. Most residents feel the Vero Beach climate too mild to justify central heating equipment, but electric space heaters are becoming increasingly popular to take the chill out of an occasional winter evening. When the mercury dips and the heaters come on, load on the plant zooms up as much as 2,000 kw. Vero Beach has come through a period of spectacular growth with a highly efficient, heavy duty power system. There is every reason to believe that the City will continue its accelerated growth and that the City power plant will continue to build solidly with quality equipment.

List of Equipment

Engines	Nordberg 7550 hp, 8 cyl., 29 x 40 in., 189 rpm, two-cycle diesel. 1957. 4500 hp, 10 cyl., 21½ x 31 in., 225 rpm, two-cycle diesel. 1952. 4050 hp, 9 cyl., 21½ x 31 in., 225 rpm, two-cycle diesel. 1953. 1630 hp, 8 cyl., 16 x 22 in., 327 rpm, four-cycle diesel. 1947.
Generators	Elliott
Governors	Woodward
Blowers	Elliott
Fuel oil	Sinclair
Fuel filters	Briggs and Nugent
Fuel meters	Neptune
Fuel injection pumps ..	American Bosch
Fuel additive	Lubaid
Lube oil	Texaco
Lube filters	Honan-Crane
Lube reclaimer	Hilliard
Lube pumps	DeLaval Steam
Cylinder lubricators ..	Manzel
Piston rings	Double Seal and C. Lee Cook
Air Filters	American Air Filter
Exhaust silencers	Maxim
Alarms	Viking
Switchboard	Allis-Chalmers
Exhaust pyrometers ..	Alnor

The Vero Beach municipal power plant. This building has been extended at the rear to accommodate the fourth Nordberg diesel engine which brings plant capacity to 19,330 hp.



SAN JOSE SEWAGE DISPOSAL PLANT

By KEN R. MACDONALD

DIESELS have been utilized by the City of San Jose, a booming California residential and industrial community, to produce an "ultra-modern" model of efficient design and a lesson in sound economics in its new \$3,444,971 municipal sewage treatment plant. The new plant is also a monument to the vision and planning skills of J. H. Pieper who, as San Jose City Engineer, in 1880 began laying the groundwork for his city's sewage system. At that time the population was only 12,000 but Pieper foresaw growth and planned a system to serve at least 100,000 residents. San Jose, principal city in Santa Clara County, now has a population of nearly 128,000. In addition, outlying districts with nearly 90,000 residents are subscribers to the San Jose sanitary sewage system.

"With a population growth such at this," explains Harold Flannery, present City Engineer for San Jose, "it can be understood why Pieper is so affectionately remembered around this office as our 'patron saint'. His original sewage system plan was ahead of its time in nearly every respect and over the years has simply undergone modifications." A major element of the modification represented by the new plant, which went into operation four months ahead of schedule, is its use of diesels, three 655 hp Enterprise DGS-8 dual-fuel

engines which make the plant completely independent of outside power sources for its nearly automatic operation. With the power derived from these Enterprise engines, it was pointed out by Plant Engineer Frank M. Belick, the new plant is "flexible enough to perform both primary and secondary sewage treatment at least part of the time. The plant also has the capacity," Belick continued, "to meet all of the requirements of a widely varying sewage load imposed by San Jose itself, its industries and its adjacent subscribing districts".

The biggest variable in the power demands made on the 450 rpm diesel engines is a seasonal one related to the heavy concentration of fruit and vegetable canneries in San Jose, which receive, process and ship more than 400,000 tons of apricots, peaches, pears and tomatoes each year. "August and September are the months of greatest power demand, when peach, pear and tomato processing is in full swing. As a result," Belick explains, "sewage and industrial waste flows during the peak of cannery activity range as high as 41 mgd".

Contrasts in both sewage volume and character posed economic and design problems for San Jose officials and their engineering consultants. Initial studies were carried out by Hyde & Sullivan. The

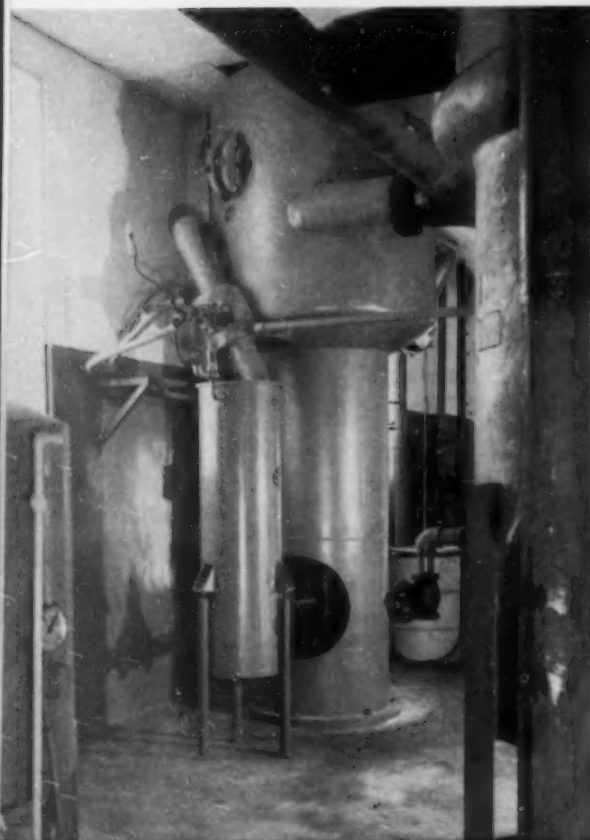
San Francisco firm who also designed the plant. David H. Caldwell was the principal design engineer, with Herbert P. Nilmeier as project engineer. Construction of the new plant was a joint venture of the Walsh Construction Company and the E. V. Lane Corporation. Enterprise engineers also contributed materially to the design planning.

The culmination of all of this planning has been the achievement, in the San Jose plant, of an objective common to all modern sewage treatment efforts, complete independence from outside power sources. This is true of the San Jose plant, except for a small requirement of pilot oil for the dual fuel operation of the 3 Enterprise diesels. These diesels run 450 kw General Electric generators which supply power to all motors and auxiliary equipment, including a fresh water well on the plant property.

"An element of major importance in our power arrangement," declares Plant Engineer Belick, "is its use of vapor phase cooling to achieve several advantages, all of which are ultimately reflected in greater plant operating economy. Vapor phase cooling," Belick explains, "means a jacket water temperature of 235 or 240 degrees, Fahrenheit, with heat transferred by flashing a portion of the water to steam. The temperature throughout the

At right foreground is Vapor Phase exhaust heat recovery boiler where exhaust gases heat jacket water even beyond the 225 degree temperature maintained in operation. Water, a portion of it, is flashed to steam in separator—the bulbous top of assembly at center. Small tank on 3 pipe legs is electric side arm heater to provide extra heat when exhaust gases are not sufficient. Steam generated here is used in sludge digesters. At extreme left, Honan-Crane lube oil filter.

Gas control room. Two Standardaire blowers at rear and at right furnish sewage gas at 4-5 psi to engines as fuel. Other equipment is Roots-Connorsville gas meters. Two meters gas as collected from digesters for storage and the third meters gas as it goes from blowers to engines.



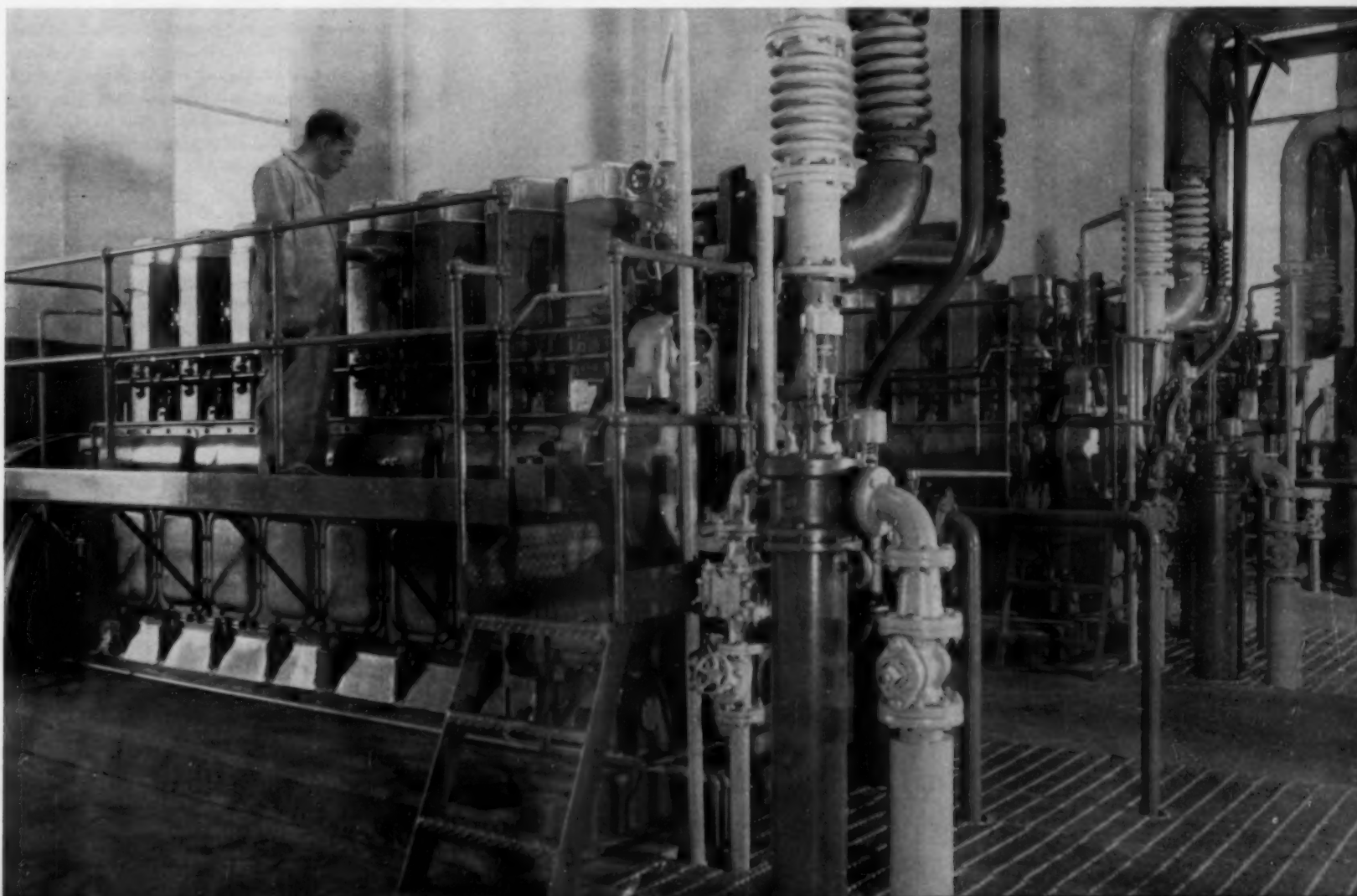
jacket water circuit remains essentially at the boiling point or better. This high temperature, with respect to the engine operation, means three things. First, it prevents corrosive action of sulphur from the sludge gas used as the principal fuel. It also contributes to better fuel efficiency. Enterprise engineers who worked with us," Belick went on, "estimate that the rate of fuel consumption is lowered from 0.395 to .380 lb per bhp-hr. Finally," Belick concluded, "vapor phase cooling means that the engines operate at nearly constant temperature regardless of load. Wear and tear is less for this reason and there is no condensation of moisture in the engine cylinder, since temperatures never get below the dew point of about 140 degrees." The vapor phase cooling is also of vital importance in the actual plant operation, in that it provides steam at 10 psi for use in the digesters without the need for separate steam generating equipment.

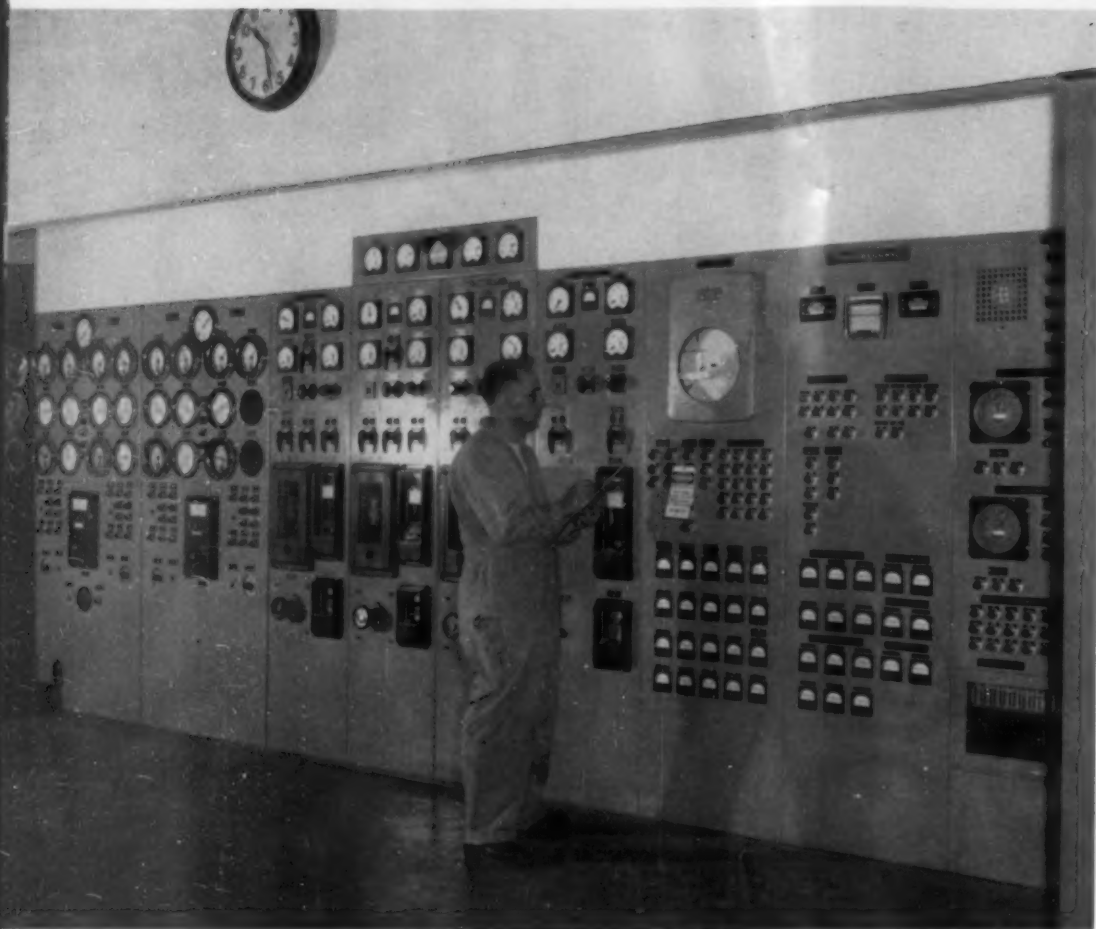
The engines are equipped with exhaust heat recovery silencers by Engineering Controls, Inc. A steam separating unit and two sidearm type 75 kw electric heaters also from Engineering Controls are operated in conjunction with the engines. Belick points out that although the jacket water is above the boiling point in normal operation, additional heat is readily available in the engine exhaust gases. He estimates that 30 per cent of heat energy input to the engine remains in the exhaust gases. The heat recovery silencers cool the



Standby Katolight generating set at rear. Jacket water manifold and pumps at left, boosting jacket water back to respective engines. Tanks for air to start main engines at right, with the two Quincy air compressors in the immediate right foreground and Exide batteries in left background.

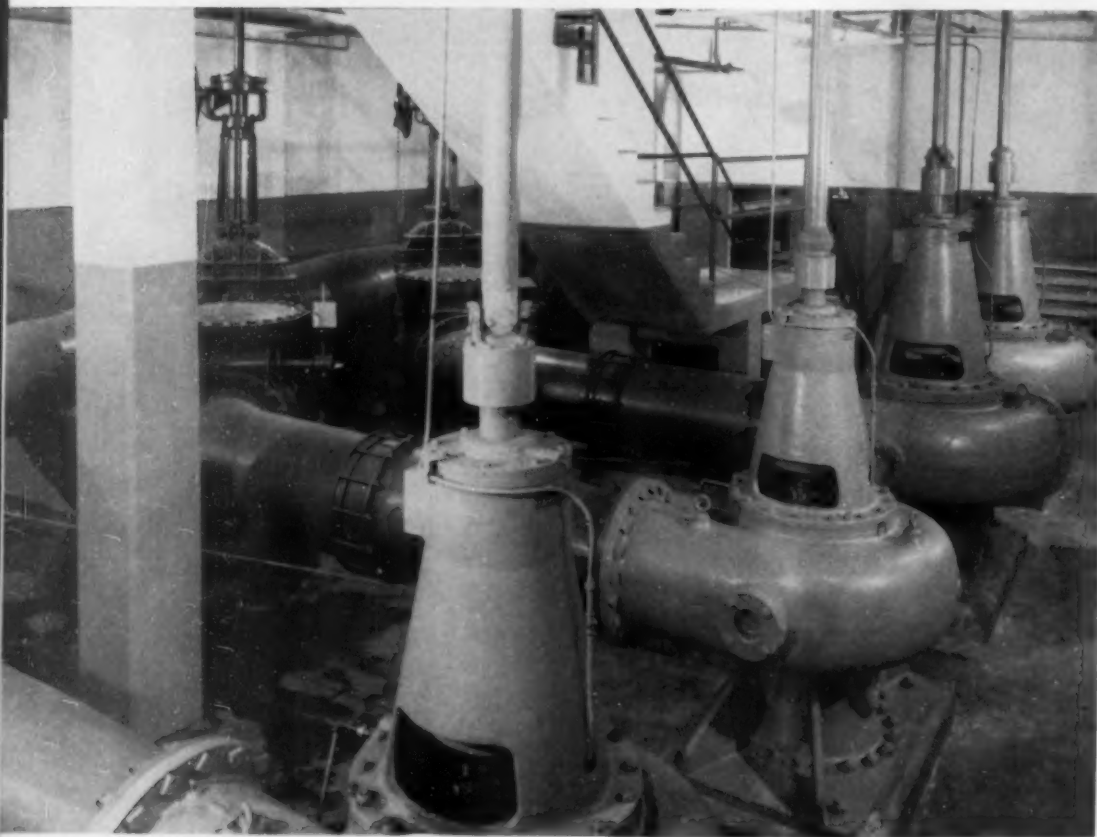
General view of the three Enterprise diesels operating as dual-fuel engines, starting and stopping on diesel fuel and running on methane gas. Thermxchanger heat exchangers at forward end of each engine with Fulton-Sylphon regulators, two per unit. Earl Yokum, Maintenance Electrician, on platform in foreground.





Engine and generator control panel and Earl Yokum. Instruments tell the kw, voltage, cycles per second, power factor, total running time per engine, lube oil temperature and pressure, jacket water temperature, fuel oil pressure, exhaust gas temperature. Pair of Alnor pyrometers located on the board to the left.

Four Fairbanks-Morse main sewage pumping units. Note gate and check valves on manifold serving them; also Dresser pipeline clamping couplings.



exhaust to the maximum extent without condensing and, in the process, boost the jacket water temperature even higher before it is flashed to steam in the separator. Sidearm heaters are standby units, for use when more digester steam is needed than can be supplied by the engine heat alone. Belick adds that there are other points of economy in the utilization and disposal of exhausted gases and heat energy from the Enterprise diesel engine operation. A small portion of exhaust gas is diverted and cooled, then compressed and dissolved in the sludge under pressure. It bubbles out of solution when the sludge flows to the concentration tank, stimulating formation of scum on the surface of sludge. "Air can be used for this purpose," Belick said, "but the carbon dioxide of the exhaust gas is more readily soluble and, hence, more efficient." Besides supplying digester steam, the vapor phase cooling contributes steam used in space heating the building. In a less complicated heat exchange, engine lube oil is cooled without the need of a separate cooling water circuit. By separate heat exchangers, engine lube oil is cooled by clean sewage effluent.

In addition to the Enterprise dual-fuel engines, General Electric generators, and the heat recovery equipment, the power generating system of the new San Jose sewage treatment plant includes air starting equipment, lube oil and fuel oil equipment, gas compressors, feedwater treatment equipment, and provision for auxiliary power generation. Air starting facilities include a pair of 3 hp motor driven Quincy D-325 compressors and two 30 x 84 in. air tanks. Lube oil is stored in two 400 gallon underground tanks and in a 250 gallon tank. A motor driven Roper transfer pump and three motor driven Roper prelube pumps are provided, along with one Honan Crane filter and heater, three Honan Crane bypass filters, and three Thermxchanger oil coolers with thermostatically controlled valves. Fuel oil is held in one 8,000 gallon underground tank and two 350 gallon day tanks. A motor driven Roper 2K5 transfer pump is augmented by a hand operated pump for emergency use. The system also includes a duplex type Honan Crane fuel oil filter. Two motor driven Standardaire blowers serve to compress gas for engine operation. The feedwater system includes Proportioners feeder pump, disc type meter with timer and reagent tank. For extreme emergency conditions, a Katolight gasoline powered engine generator set provides up to 25 kw for lights, instruments and emergency apparatus.

Operation of the Enterprise engines themselves, and channeling of the electric power they generate, is virtually automatic and is concentrated at a comprehensive control panel in the plant power building. Shift requirements of three men are established to cover routine maintenance and repair services as well as standby work. In actuality, one man, alone, monitors and controls the entire plant function. Belick makes it clear that not all the engines will be used at any one time, since they total nearly 1,900 horsepower against plant requirements of only about 1,000 hp during peak flows. Generally only one engine is required and the burden of power demand is shifted from one to another at intervals. Of the \$3,444,971.77 total cost of the San Jose Sewage Plant project, \$2,997,232.58 went for plant construction and equipment.

NEW LOS ANGELES COMPRESSOR STATION

**Eight Ingersoll-Rand Turbocharged Gas Engine-Driven Compressors Now Replace the Steam Units
In this Los Angeles \$5,000,000 Facility.**

By JAMES JOSEPH

IN pages 26 and 27 of the October, 1956 issue of DIESEL PROGRESS, we brought to you the basic facts concerning the change-over of the Southern California Gas Company's Ducommun Street compressor station and here we bring you the illustrations and details of the plant as it now is after the conversion from steam to natural gas engines, in the form of an interview between our Associate Editor, James Joseph and S. T. Wrenn, the Southern California Gas Company's east area plant foreman.

"With natural gas low pressure storage, you design for peak loads, and expect to run your engines intermittently . . ." That, from a gas utilities engineer, sums up a problem endemic to the industry and its low pressure holder compressor stations. It means more tedious maintenance and some significant rescheduling because most maintenance specs are based on round-the-clock operations, not intermittent run-time.

Typically, Southern California Gas Co. is taking a closer, harder look at routine maintenance as it puts into service eight, 2000 hp Ingersoll-Rand turbocharged gas engines and their compressors at its new \$5,000,000 Ducommun street station, in Los Angeles. The eight Ingersoll-Rand type 412 KVS-2, direct-connected, turbocharged, 4-cycle, gas engine driven, 2-stage gas compressors are first of their type in California and among the first operated by a western utility (many KVS engines are operating along major distribution lines in various parts of the country).

At So-Cal's Ducommun street station, S. T. Wrenn, the utility's east area plant foreman, sums up intermittent maintenance scheduling: "running intermittently, you expect more maintenance and some important digressions from suggested time-checks. It takes longer, operating engines on a peak-demand basis, to build up those hours—those important comparative hours."

On an average, for example, Wrenn expects each of Ducommun's KVS-2s to run 6 hours daily. But that may be at winter's peak (though a peak load may come at any season, depending on a number of distribution factors). Year around, only four engines may be working daily, and then only 4-5 hours apiece, with shutdowns probable during slack hours (just after mid-day and late at night, when gas usage traditionally ebbs). Monthly, then, Wrenn might expect at most 150 hours per engine. Yet Ingersoll-Rand terms common for these engines a run of 720 hours monthly, nearly five times Ducommun's anticipated run. Ducommun's problem: to custom-tailor maintenance procedure to its own intermittent operation.

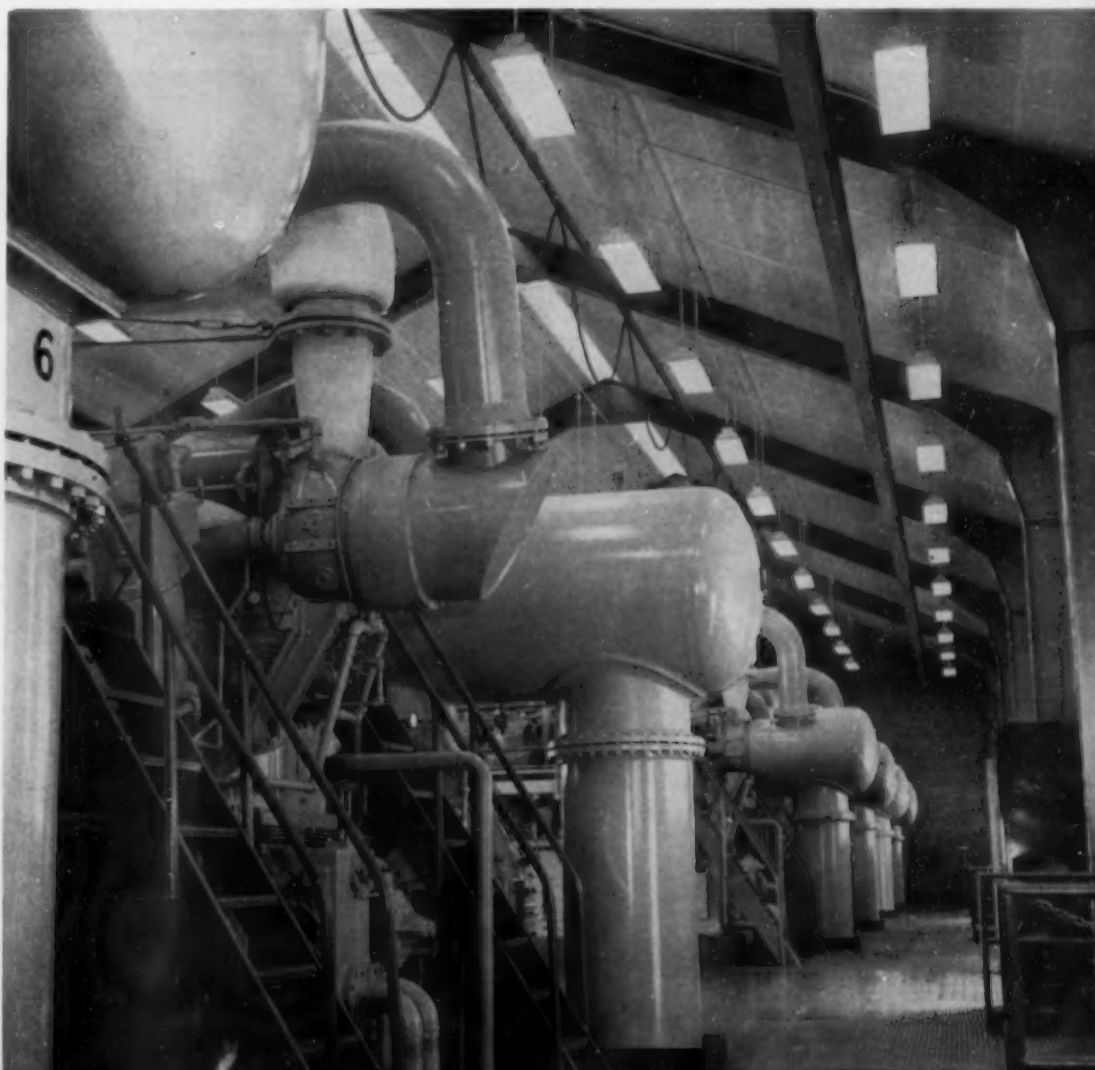
That's one reason, at least, why Wrenn has set-up a maintenance program based on an anticipated run-schedule: rather than add crankcase oil once daily (as called for in suggested specs), Ducommun oil level is checked after every run (and an engine may run twice daily). Whereas, a constantly-run engine's governor oil level should be checked once daily, So-Cal, at least initially, is checking levels before each engine start-up—again, as many as twice or three times a day. Where critical engine exhaust temperatures are usually checked hourly and recorded every 8 hours, at Ducommun they're recorded every hour.

Says Wrenn, "what every intermittent station operator needs is a yardstick—records which, by data comparison, will signal trouble. That's one reason why we're cutting recording time, making more entries, doing more checking." By the book, lube oil pressure should be recorded every 8 hours. At So-Cal's Ducommun station, oil pressure figures are recorded every hour. Cooling water temperature, another critical is, at Ducommun, scheduled

for checking every hour (as the manufacturer suggests), and recorded every hour (instead of every 8, as suggested). And "soon", predicts Wrenn, "we'll have a record of every reading under varying loads and ambient temperatures for our permanent records and future guidance."

More preventative maintenance and records? Lots more! There's greater tendency for plugs to foul, what with condensation and more frequent air start-ups. For, when starting air blows into cylinders, there's more chance of loosening rust and other products of normal oxidation. The result: greater tendency toward fouled plugs. Frequent idling is another compounder of trouble, when, like Ducommun, you run intermittently. An occasional miss at no load rocks the engine and may loosen some of an engine's hardware, and Ducommun engines, if they hew to utility averages, may idle as much as 60 minutes a day. This includes a 15 minute warm-up idle prior to going on the line, another 10 minutes after the load has been taken off an engine, and before it's shut-down. The pro-

Compressor-eye view of portion of Ducommun Street station.



cedure, for many an engine, may occur twice daily, perhaps more often, depending upon distribution needs.

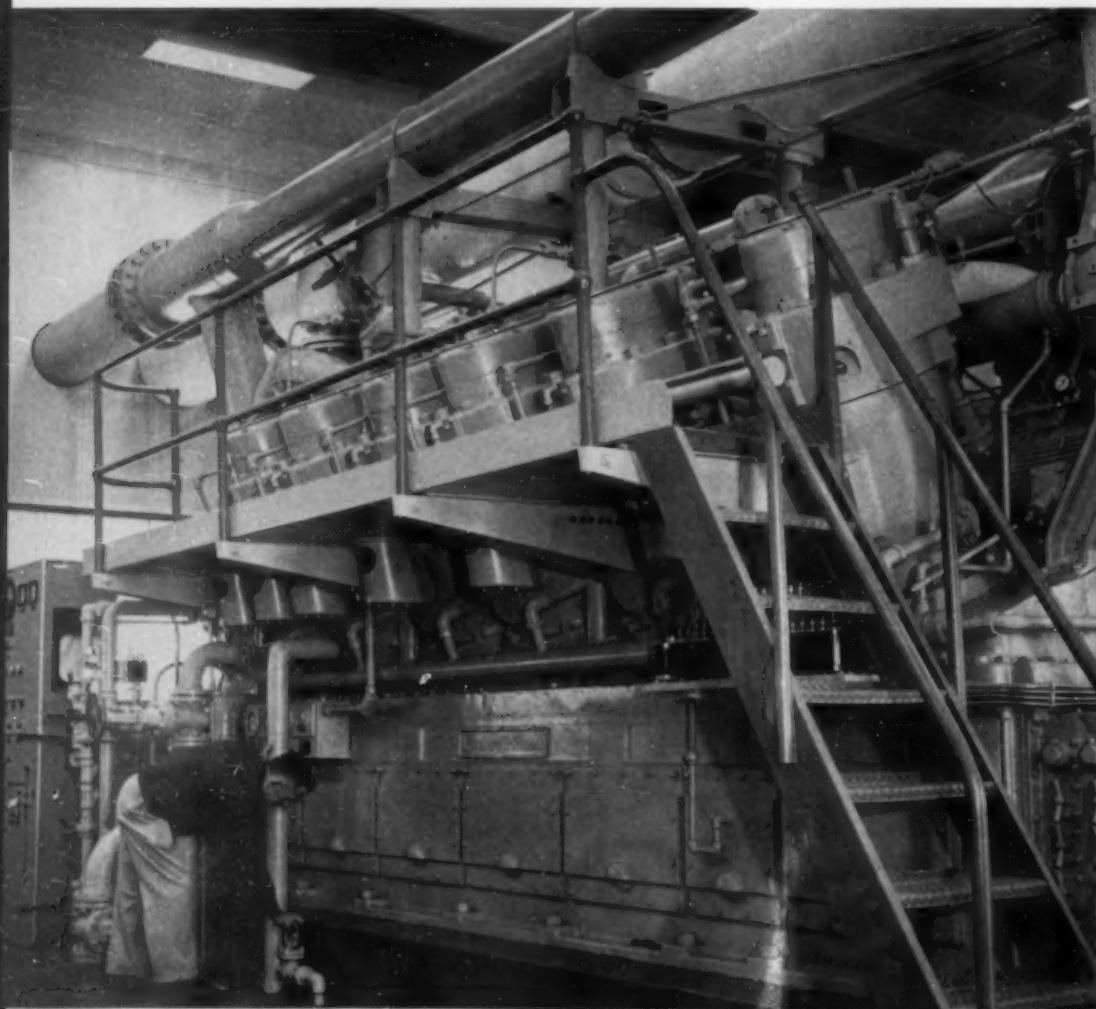
Ducommun's assigned chore is to keep header pressure at 70 psi, the flow approximately 6,000,000 cu/ft/hour. Ducommun does this by supplying (from a number of gas holders perimetering the station), enough gas to make up for deficiencies in the line. From the station, gas feeds via 7 lines (14 to 20 in. diameter) to a half dozen Los Angeles basin communities. Neither Ducommun nor So-Cal's dispatcher (who in reality controls Ducommun's operation), knows when or how much gas will be needed, until load requirements are known. That depends on a complex of factors, including actual system usage. Thus, routinely, Ducommun engineers warm up as many as four engines beginning at 6 a.m., in anticipation of needs. The engines, of course, are idling. By 7 a.m. the dispatcher normally knows the number of units needed and orders them on the line. The unused engines are shut down.

All this on-again, off-again running, with idling-hours building, illustrates some of the headaches in intermittent service—one reason why, unlike many more continuous stations, utility compressor plants like Ducommun have to play maintenance by ear, adapt and revise, until each station standardizes to what amounts to a custom-tailored maintenance procedure. Wrenn has just put into operation a custom-tailored hourly check procedure. "The most important checks," explains Wrenn, "in an operation of this sort. It's tedious running all these checks hourly, but when you operate intermittently, there's not much choice."

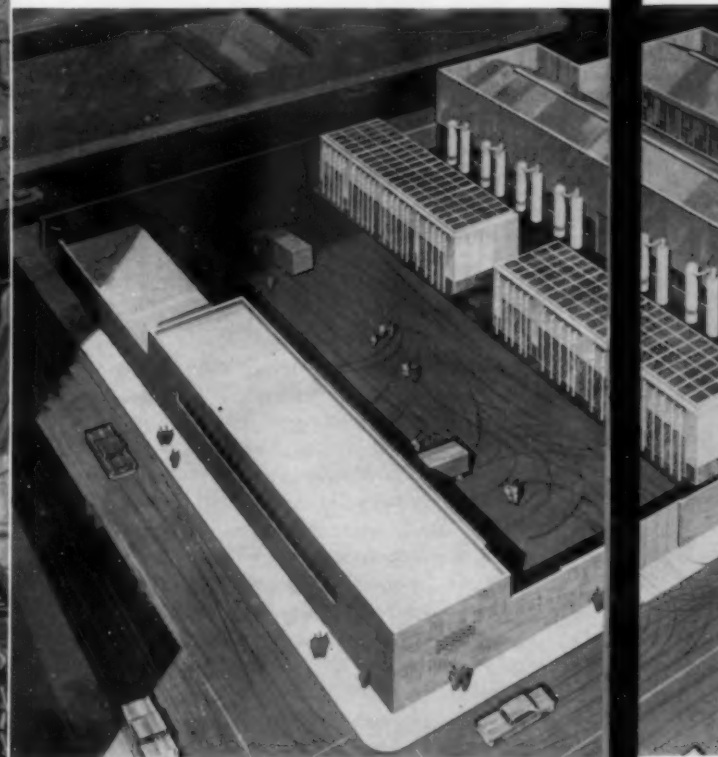
In brief, here's So-Cal's hourly check list: (1) Ambient temperature (in degrees F); (2) RPMS (from tachometer mounted on each engine); (3) Air manifold (psi); (4) Fuel manifold (psi); (5) Air control valve opening (percentage) (normal: about 45%); (6) Power cylinder exhaust temperature: (degrees F) (on each of 12 cylinders) Max. for cylinders (about 900 degrees) Min. for cylinders (about 800 degrees) Average (about 830 degrees); (7) Turbine exhaust temperature (in degrees) a. Fly wheel end—not over 900 degrees F. b. Oil pump end—not over 900 degrees F. (8) Jacket water temperature (in degrees) a. Power cylinder inlet (should be about 160°), b. Power cylinder outlet (should be about 172°), c. Fly wheel end, turbine outlet (should be about 172°), d. Oil pump end, turbine outlet (should be about 172°); (9) Lube oil temperature (in degrees) a. Engine inlet—135° to 140°, b. Engine outlet—150° to 160°; (10) Lube oil pressure (in psig) a. Pump discharge (to bearings) in psig 50 #, b. To Fly wheel & oil pump ends, turbines in psig 32-35 #, c. Drop across filter in psig 0-5 # (plus: lube oil added in gals); (11) Compressor gas temperatures, Inlet 45°-80° (depends on season), Intermediate 220°-230°, Discharge 140°-160°; (12) Suction pressure (inch water) 5½ to 10½ in.; (13) Discharge pressure (in psig) 60-85; (14) Time On (exact) . . . Time Off (exact) hours run today—Total hours; (15) Berry pump discharge pressure (in psig) 550 #-600 #.

"That's a lot of checking, especially with 8 engines to look after," concedes Wrenn. "Of course, we try to balance engine hours. Still, we never know if one engine or eight will be needed. It all depends on distribution pressures on orders from our central dispatching station. But," adds Wrenn, "that's

View of typical Ingersoll-Rand turbocharged gas engine-driven compressor.



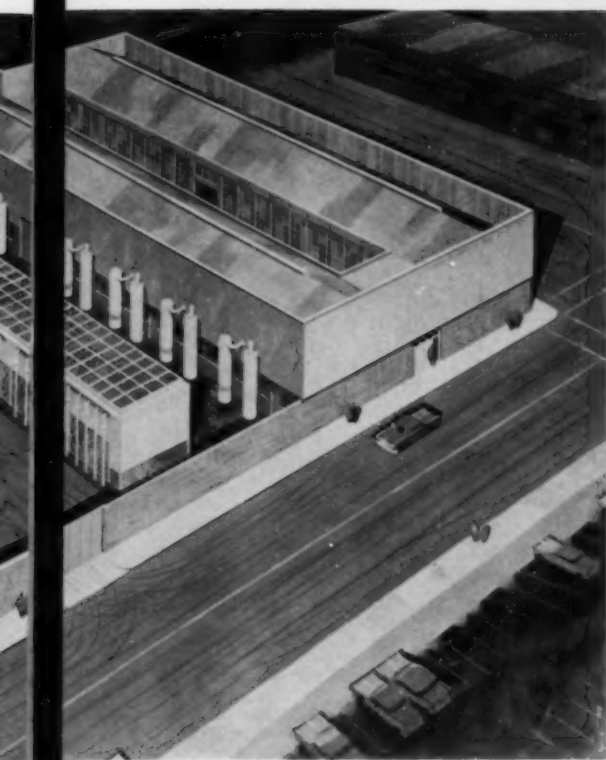
Intermittent runs mean more checking, more maintenance, custom-tailored maintenance for every plant. Note Alnor Pyrometer.





Forest of equipment: left, jacket water surge tanks and hydraulic oil surge tanks. Right, air intake cleaner-silencers and side inlet exhaust snubbers by Burgess Manning.

Artist's concept of new station . . . compressor building, right.



how you operate when you run intermittently." Load . . . and intermittent run-time were the big reasons why So-Cal, when it planned its \$5,000,000 modernization which replaced with gas compressors nine venerable steam compressors, decided on eight engines of fairly modest horsepower. For, as one So-Cal engineer puts it, "when we need pressure, we need it, and eight compressors are insurance against the failure of any one." Meantime, Ducommun is custom-tailoring its own, individualized maintenance program.

One of the most interesting parts of this important new installation is the method taken to make this plant one of the quietest of its type in view of its location in downtown Los Angeles. The special air intake cleaner-silencers installed on each of the engine compressors are erected vertically alongside the compressor building. They were engineered specially for the Ducommun Street installation by Burgess-Manning. These units are 48 in. in diameter, 222 in. long, with access doors to the filter chambers. A total of eight units were supplied. Along-side each of the combination air intake cleaner-silencers are standing vertically Burgess-Manning special side inlet exhaust snubbers, one per engine, totaling eight units. Each unit is 48 in. in diameter, 225 in. long. (Sixteen units make quite a forest!) In addition, on the second stage discharge of the Ingersoll-Rand gas compressors, there are installed special Burgess-Man-

ning pulsation snubbers for eliminating gas pulsation in the compressor piping away from the pressure discharge side of the Plant.

Equipment List

Main Gas Compressors	Ingersoll-Rand
Starting Air	
Compressor	Ingersoll-Rand
Air Compressor	Ingersoll-Rand
Fin Fan Exchangers	Fluor
Intake Air Cleaner-	
Silencers	Burgess-Manning
Side Inlet Exhaust	
Snubbers	Burgess-Manning
Plant Air Filter	Dollinger
Oil Cooler	Ross
Jacket Water Cooler	Fluor
LO & CC Water Cooler	Fluor
Gas Intercooler	Fluor
Standby Electric Set	Waukesha natural gas engine driving Delco 75 kw generator
Turbocharger	Elliott
Exhaust Muffler	Burgess-Manning
Pulsation Dampener	
(1st stage intake)	Fluor
Pulsation Dampener	
(2nd stage discharge)	Burgess-Manning

Engineering and Construction: Guy T. Martin and Co. Consulting Architects: Allison and Ribble.

THE UBIQUITOUS DIESEL SHOVEL

Pennsalt Chemicals Makes Good Use of Its New International Crawler-type Front-end Loader, the 77-hp Model 12 Payloader, at Its Natrona, Pa., Plant.




These two photos show Pennsalt Chemicals' new International model 12 Payloader dumping 1- $\frac{1}{4}$ cubic yards of cryolite mineral in Dempster buckets at Natrona, Pa., plant.

Worth its salt—This International 77-hp model 12 Payloader is being kept busy by the Morton Salt Company at its new mine at Fairport Harbor, Ohio. The 1- $\frac{1}{4}$ cubic yard bucket, rear-engine mounted unit is used for loading and handling rock salt and loading and trim-loading trucks at the scales. Here it deposits a load of the mineral on the stockpile. The Fairport Harbor mine project, a 2 $\frac{1}{2}$ -year program entailing construction of shaft, mines, and a mill, will produce industrial and commercial salt.




This shows the model 12 Payloader as it dips into the mountain of mineral at Pennsalt Chemicals' Natrona, Pa., plant.



Here, the International model 12 Payloader's 1- $\frac{1}{4}$ -cubic-yard bucket takes a bite of the boulder-size chunks of cryolite at Pennsalt Chemicals plant in Natrona, Pa. 



 The 77-hp International model 12 Payloader, with its 1- $\frac{1}{4}$ -cubic-yard bucket heaped with cryolite, heads for Dempster buckets, in which the mineral will be deposited. Site is Pennsalt Chemicals plant at Natrona, Pa.

FLORIDA'S NEW DRAGLINE

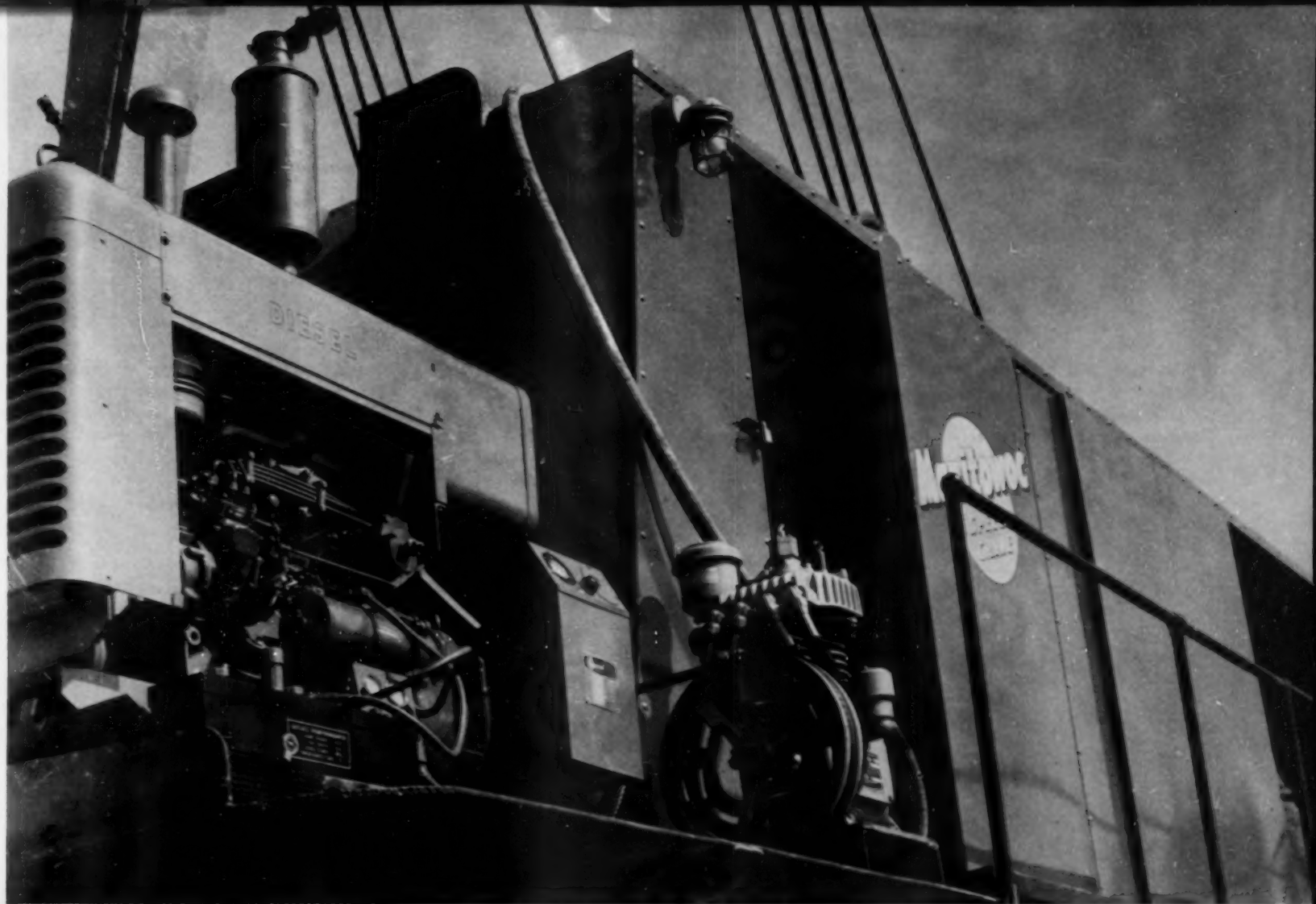
By ED DENNIS



SPREAD out before us were the endless miles of the great Florida Everglades. The white scar, stretching for miles through water and sawgrass was the rock and earth blasted by dynamite and dug by a new juggernaut. The steel flanged bucket of this new gigantic dieselized dragline was rhythmically rising and falling, gauging and tearing out, huge chunks of this virgin soil and using the diggings to build another levee for the Central & Southern Flood Control project.

That monster of this mechanical age was a new #4500 Manitowac dragline powered with a model 40-C-S-6 Superior diesel engine and said to be the first of its kind operating in the south eastern part of the United States. It was recently purchased by the James B. Cross Construction Co., who has the sub-contract to construct levee #5. This project, "Levee #5", when completed, will join with levees 1 through 8 in providing a total of 116 miles of protection for the 1,100 square mile agricultural area of rich organic soils located south and east of Lake Okeechobee. According to the Army Engineers, this will enable ideal water control within this area and will also provide the needed protec-





The model 40C-S-6 Superior diesel engine manufactured by the White Diesel Engine Div. of the White Motor Co., rated 360 hp at 900 rpm. This 6 cyl. Superior has an 8½ in. bore and a stroke of 10½ in. Note Winslow oil filter on the engine and Gardner-Denver air compressor to the right.

tion from high water and hurricane-driven wind tides in the conservation area.

The total comprehensive plan of the Central and Southern Florida Flood Control Project is the largest earth moving job entered into by the Army Engineers since the building of the Panama Canal. It represents a carefully calculated long range program to use this hitherto unprofitable swampland in a useful way. The new Manitowac speed crane had its final "put together" about 20 miles south of Lake Okeechobee and along side of route #27, the highway that runs through the heart of the Glades. It has a Superior diesel engine rated 360 hp at 900 rpm. This six cylinder diesel has a bore and stroke of 8½x10½ with a piston displacement per cyl. of 595.8 cu in. and is equipped with Winslow filters and Amot controls.

Extreme simplicity and "know how" are the keynote of its installation allowing easy access to all parts of the diesel engine and machinery thereby reducing labor maintenance costs in servicing the equipment. The Superior diesel engine is radiator cooled and equipped with a Ross lubricating heat exchanger, double lube oil pumps to insure full oil pressure at all times and two Vortex air cleaners for the correct amount of clean intake air under all conditions. Even after unloading, final assembly and testing was accomplished, another big problem faced the crew, to get to the work location which

was five miles deep in the Everglades over shifty and treacherous muck land.

This was solved by the use of mats made of 12x12 timbers bolted together to make a mat measuring 6'x36' and topped with 3x12 boards. They walked the machine at the rate of one mile a day by using the 140 ft boom to pick up the mats in the rear and lay them out in the front as they proceeded over the soggy saw grass. At the work location, this new model Manitowac dragline is being used along with an older model and three dieselized air compressors dynamiting rigs to blast and dig the borrow canal and build the double levee. Foundations of Glades muck and white oolite rock are shot skywards as the dynamite crews work to loosen the rock for the dragline. The holes, 18 feet deep, are drilled at the rate of 75 to 100 a day, depending on the hardness of the rock and approximately 1200 pounds of dynamite are used for every 100 feet of canal.

The levee will be about 15 miles long with an average exterior height of 7 feet and an interior levee of 4 feet. The depth of the borrow canal will average 12 to 14 feet. The construction will involve the digging of about 1,500,000 cubic yards of rocky material at a cost of \$769,372.00. Upon completion of Levee #5, encirclement of the rich agricultural area south and southeast of Lake Okeechobee, started in 1950, will be completed.

WAYS TO LEAD WATER TO WORK

Agriculturalists from All Over the World Came to California to Study Irrigation and Drainage in Two Meetings.

By F. HAL HIGGINS

OIL, gold, iron, timber, fish and other of Nature's contributions to civilized man's life rank behind water. The two big events in California recently at San Francisco and Davis drew government representation from thirty nations. The Intersociety Conference on Irrigation and Drainage in the Bay city was sponsored by the American Society of Civil Engineers, American

At the 3-day demonstrations at Davis, the world famous staff of the Department of Irrigation of UC had the demonstration plots laid off in 7 sections with a staff man in charge of each to tell about the demonstrations in each area. They were: (1.) Water Development, Conveyance and Measurement. (2.) Land Preparation in which machinery for removal of brush or crop residue,

equipment, most of it powered by diesel tractors and engines. Plastic and rubber pipe were seen as small competitors with aluminum. Fertilizer application in open ditch irrigation was also seen. (5.) Drainage of irrigation land demonstrated pumping, tile drainage by machine, mole drains, etc., with diesel tractors supplying important, dependable, efficient power.



Ray Reed & Sons, Modesto, Calif., brought up their Buckeye ditcher to dig a ditch and lay a no-joint concrete pipe for the visitors at Davis. Reed says he owns three Buckeyes, each powered by a GMC diesel with Twin-Disc torque converter. One is equipped with hydraulic elevator. The concrete pipe laid was "Viber-Cast No-Joint" in 38 in. size. This system can lay pipe up to 10 ft in diameter.

The Gurries scraper was sent up from the Gurries factory at San Jose for the Irrigation demonstration. Here it is land levelling for the Irrigation Demonstration at the University farm at Davis before 1200 visitors from 30 nations. Pulled by a Caterpillar D2.

Society of Agricultural Engineers, and the Soil Science Society of America, all in cooperation with U. S. National Committee of the International Commission on Irrigation and Drainage. Following the 4-day program at the Palace Hotel, study tours over the outstanding engineering projects of the state were made for two weeks. Tracy Pumping Plant, Orland irrigation project, Shasta Dam, Feather River project site, Folsom Dam, Tri-dam project, Friant Dam, Friant-Kern Canal, Antelope Valley, Lower Gila Valley, and Los Angeles were included in Study Tour A. Study Tour B of irrigation, flood control and agricultural features included University of California-U. S. Rice Station, implement manufacturing, cotton farming, citrus growing, ranch operations, California Citrus Experiment Station at Riverside, U. S. Salinity Laboratory, Imperial Valley and San Diego.

staking and marking for grading were shown; big land grading equipment, deep ripping to break up compacted subsoil, finish grading, field ditch construction, small reservoirs and tail-water sumps were demonstrated also. Big GM-powered Buckeye ditchers, Allis-Chalmers tractors, Caterpillar-pulled Briscoe ditchers and ditch cleaners, motor graders, Deere, Case, David Brown, and International diesels were seen in action as they powered the biggest to the smaller models. (3.) covered the sprinkler irrigation that has rapidly spread over the map as being cheap and practical for many areas. Both Continental stationary and International and Ford tractors were shown powering these sprinkler systems. Aluminum pipes and engine-powered portable sprinklers have done much to cut labor and costs. (4.) Surface irrigation methods and practices demonstrated much new



More than 50 different commercial organizations cooperated with equipment, chemicals, staffs of trained engineers and demonstrations to the 1200 visitors from over 30 nations. Diesel engine and equipment builders included Allis-Chalmers, General Motors, Caterpillar, Case, Deere, International Harvester, David Brown, Continental Motors, Cummins, and Union Diesel Engine Co. Local dealers representing some of these furnished machines. Both Shell and Standard of California furnished fuels and chemicals. The latter company's chemical subsidiary is California Spray-Chemical Corp. The University irrigation officials looked upon this event as a most successful and complete demonstration that not only spread its

advanced methods and the state's leadership in this field over the world but resulted in bringing many students from the far corners of the world to Davis for future study of this engineering course.

Pouring the concrete from mixed-in-transit truck-mixer for "No-Joint" concrete pipe with the Buckeye GMC-powered ditcher with "Viber-Cast No-Joint" attachment receiving the wet concrete and moulding it into 36 in. pipe laid as made.

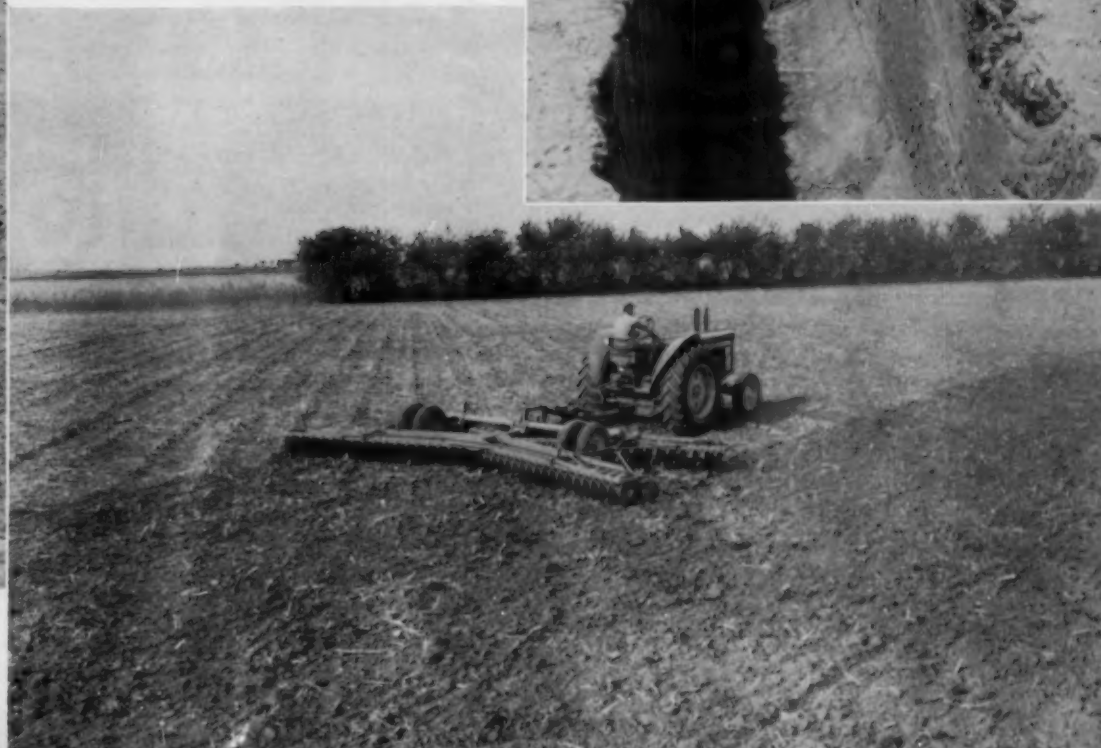


Reeds' Buckeye ditcher left a smooth bottom for the laying of the "No-Joint" concrete pipe. Caught on the first day's preparation for the Irrigation demonstrations at Davis, California, before 1200 visitors from 30 nations.



Allis-Chalmers demonstrated its big HD crawler tractor pulling a heavy duty disk harrow at the Irrigation Demonstration at Davis.

John Deere 820 diesel pulling John Deere "FW" 21 ft disk harrow.



NEW HAVEN'S *DALZELL I*

**Three Identical Vessels Will Feature
1800 Hp Fairbanks-Morse Opposed-Piston Diesels
KaMeWa Controllable Pitch Propellers.**

THE railroad tug *Dalzell I* is the first to be completed in a group of three identical vessels for operation in the Metropolitan New York area by the New York, New Haven and Hartford Railroad Co. These boats will be the most powerful in railroad harbor service, driven by Fairbanks-Morse model 38D8-1/4 10 cylinder, opposed-piston diesels rated 1800 hp at 765 rpm. The engines drive 10 ft diameter 3-bladed KaMeWa controllable-pitch propellers at 190 rpm through vertically-offset reduction gears and are one of the first in railroad service to use this form of propulsion and control. During trials, the *Dalzell I* attained speeds in excess of 13 knots and was brought to a crash stop in 18 seconds from full speed ahead to dead in the water. Dimensions of the tugs are no greater than commonly found in similar boats of lesser power. The tugs are 102 1/2 ft long, 26 ft 4 in. molded breadth, 13 ft 3 in. molded depth and 12 ft 6 in. draft. Of welded steel construction throughout, they are of special design by Thomas D. Bowes, noted marine architect and engineer of Philadelphia, to cope with the more arduous operation imposed by navigation of the swift tides at Hell Gate. Location of the car float terminal of the railroad is outside this stretch of fast water. The vessels are being built by the Camden, N.J. yard of the RTC Shipbuilding Corp.

To understand why such powerful tugs are needed it is necessary to know something of the methods employed around New York City for the interchange of freight cars between the many railroads converging upon the city and neighboring areas of New Jersey. Manhattan, Brooklyn and Staten Island are all surrounded by water. Railroad tunnels handle the passenger service but cannot take care of freight trains. Freight yards in each of the boroughs are of limited capacity and effective car-movement by water is needed to alleviate this situation. Loaded freight cars are shuttled by water from one railroad to another. Water borne freight meets train schedules on railroads leading out of the city in all directions. Tides are swift in some of the channels. The freight cars atop the car floats often catch the high winds on the harbor and a car float "sails like a witch" if not under tow by a powerful tug, which need not wait for time, wind or tide. The usual procedure is to tow the floats in pairs, one on each side of the tug. Add to this general picture the need to keep freight moving on train schedules through the traditionally treacherous Hell Gate with its swift tides, rocky shores, narrow stretches of crooked water and the advantages of high power and perfect control of that power are obvious. Not only propulsion power, but steering control of the highest order is needed. Tugs must provide full visibility for the skipper in all directions

over the tops of the cars on the floats. By progressive steps tugs for this service have been improved over the years, and now the New Haven is putting into service the latest and most advanced vessel in its qualities of power and maneuverability.

No time can be lost in "babying" a railroad tug. The crushing action, the quick pickup, the tight spots to be gotten out of demand precision and dispatch and the tugs must come through unharmed. Hulls must be extremely strong to take the buffeting of the big carfloats alongside. Therefore the top strake of the hull forms a broad flat guard the full length of the vessel. It is made of 1 1/4 inch steel plate supported by extra heavy frames. The designer's objective was to provide maximum usable horsepower and to make it instantly available for maneuvering the vessel and its tows. The Fairbanks-Morse opposed-piston diesel offered a heavy-duty power unit with high capacity in a compact package. By connecting this engine to a controllable-pitch propeller, all this power (except for minor losses in the reduction gears) becomes at once available at the touch of a control lever in the pilot house. The single-lever control simultaneously regulates both engine speed and propeller pitch in such a manner as to obtain maximum performance under any load, ahead or astern. Vessel speed can be accurately adjusted through an infinite number of increments from full ahead to full astern making it possible to maintain the position of the tug against tide and current.

Combination of the efficient, heavy-duty diesel and the controllable-pitch propeller is expected to provide excellent fuel economy since the engine can operate at maximum efficiency under varying load conditions. Also, low maintenance is anticipated since the engine need not be reversed and is protected against overload by automatic pitch adjustment. The main engine has closed fresh water cooling, engine-driven service pumps to handle cooling water, oil and fuel, and the usual flexible connections and exhaust line to the Maxim silencer in the stack.

The *Dalzell I* is a lofty ship, actually a three decker with her high pilothouse on top of a full headroom Captain's stores space. The hull is smart, the sheer is handsome, the deck areas are broad and handy for working the tow lines. Construction is longitudinal with transverse framing aft. Fore and after peaks are for ballast to maintain trim. Fuel is carried in deep tanks divided to provide a center and two wing tanks. The hull is rather full-bodied forward. Bilges are turned sharply amidship. A clean run of water to the propeller assures good towing ability. The semi-balanced rudder provides excellent steering control. The pilothouse



Sponsor of the *Dalzell 2* is Miss Michaela Dalzell, daughter of the chairman of the owners, Dalzell Harbor Corp. With Mr. Alpert. Mr. Alpert is president of the New Haven Harbor Dept. all three vessels under lease. Mrs. Alpert was sponsor of the *Dalzell 1*.



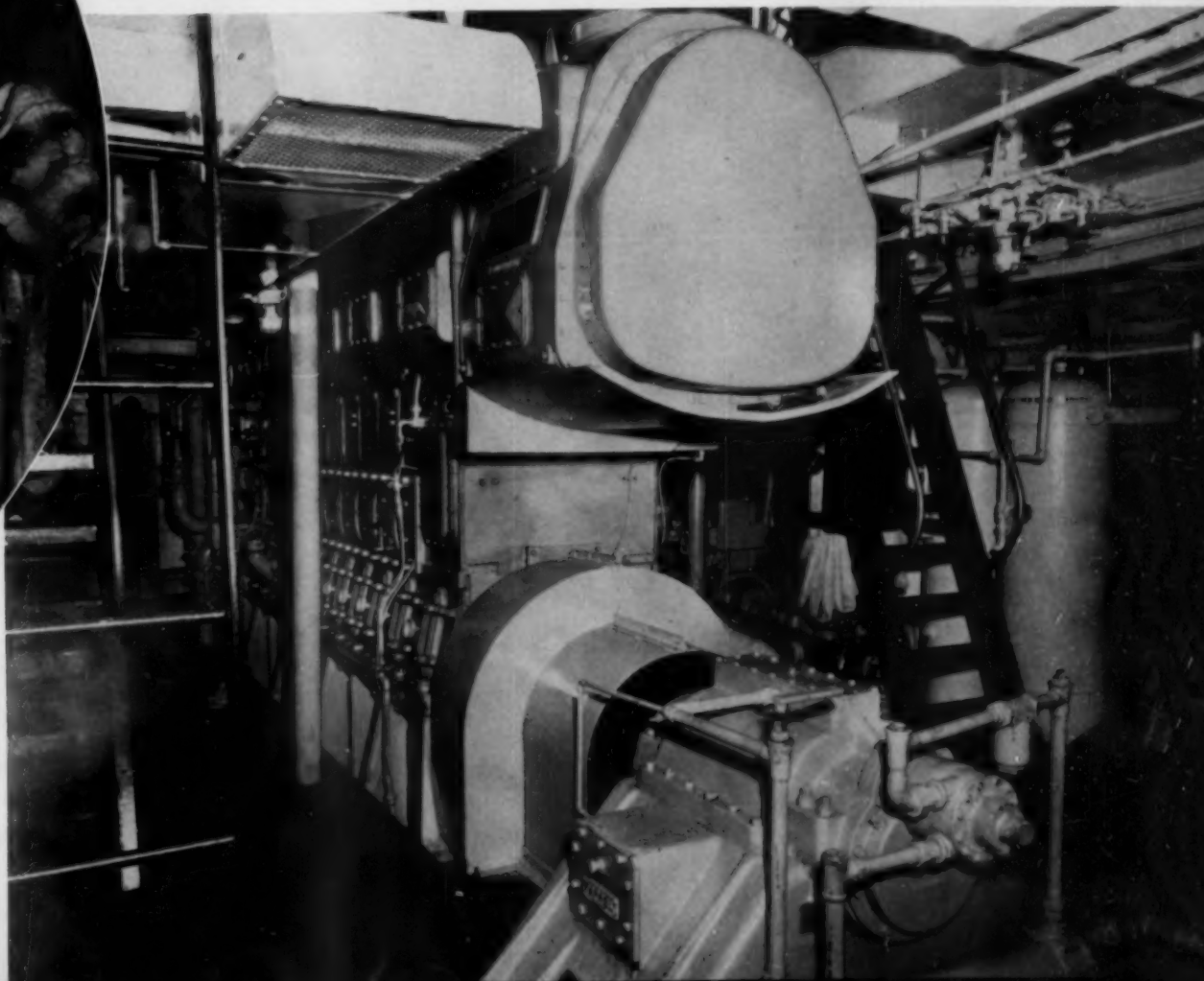
Most powerful railroad tug in the New York harbor is the *Dalzell I* pictured here during trials at Camden, N. J., where she was built by RTC Shipbuilding Corp. With an 1800-hp Fairbanks-Morse diesel driving a Ka-MeWa adjustable-pitch propeller, the vessel attained speeds in excess of 13 knots.

on the top deck is extremely spacious with seats on either side, a small pedestal-mounted desk in the after starboard corner, RCA ship-to-shore radio and telephones for direct communication with the dispatcher. Port and starboard single lever KaMeWa control stands built by Henschel are provided for simultaneous control of propeller pitch and engine speed. A Wheeler steering stand is located on the centerline.

Principal Equipment

Main engine	Fairbanks, Morse
	10-cylinder, 38D8-1/8,
	1800 hp, opposed-piston diesel
Shaft driven generator	Safety Industries Inc.
Storage batteries	Exide
Main engine heat exchangers	Ross
Main engine governor	Woodward
Main engine pyrometer	Alnor
Main engine silencer	Maxim
Air compressors (2)	Quincy
Lube oil standby pump	Roper
Propeller-engine control	KaMeWa
Whistle	Kahlenberg

The *Dalzell I* is powered by a 10-cylinder Fairbanks-Morse opposed-piston diesel rated at 1800 horsepower at 765 rpm. The diesel drives the variable-pitch propeller directly through reduction gears.



Michael Dalzell, daughter of Lloyd Dalzell, board harbor prop. With her are Mr. and Mrs. George of the New Haven Railroad which will operate Mrs. Bert was sponsor of the *Dalzell I*.

52 PIECES OF DIESEL EQUIPMENT WORK TO COMPLETE A STRETCH OF HIGHWAY

By JIM BROWN*

WORK on converting US-23, a narrow and winding 2-lane road into a 4-lane divided highway, extending from Ann Arbor, Michigan to the Northern tip of lower Michigan was begun early in 1956 and is being continued throughout this summer.

Sugden and Sivier, Inc. of Oak Park, Michigan and Denton Construction Co. of Grosse Pointe, Michigan have combined forces in a joint effort of relocating US-23 on a 4.562 mile stretch of highway Northeast of Ann Arbor, Michigan. The job includes 30 acres of clearing, 4,259 sq yds of grubbing, rough grading, finish grading, compacting, concrete paving and bridge building for a 4-lane highway measuring 120 ft from shoulder to shoulder and consisting of two 24 ft lanes of 9 in. concrete divided by a boulevard strip of 46 feet. Denton Construction Company was top bidder on this project, which covers two counties and includes two overpasses, one at Barker road near Whitmore Lake and one for the Ann Arbor Railroad. The bid was \$1,114,075, and the construction work began on the Federal Aid project (M 47011 and M 81075) on the 1st of November, 1956 and will be completed in September 1957.

The relocation of US-23, called one of the three busiest roads in Michigan has been planned and is being completed in order to relieve the congestion of traffic along the present route. Sugden & Sivier are under sub-contract to Denton Construction Company for the clearing, grubbing, grading, excavation and overpass work on the part of the project which begins at North Territorial

Road and ends at a junction with the present US-23 a few hundred yards from the Northern part of Whitmore Lake.

Sugden and Sivier have been in the construction business since 1938 and have concurrently worked on several other large projects; a highway construction job near Jackson, Mich., several overpasses on the John Lodge Expressway in Detroit, grading for a large Lincoln-Mercury plant near Novi, Mich., two miles of 4-lane expressway near Chelsey, Mich., a sewer job in Inkster, Mich. and 7 miles of expressway near Kent Lake, Michigan.

This is the second stretch to be constructed on the "New" US-23; the first (reported in March 1957, DIESEL PROGRESS) ran from US-12 near the outskirts of Ann Arbor to North Territorial road and was completed by Western Construction Company of Sioux City, Iowa on October 31st, 1956. The third stretch will begin at the junction of the new and the old US-23 near Whitmore Lake and will probably end approximately 7 miles farther north at US-16.

Sugden & Sivier worked on the project last winter, when weather permitted, but didn't really get underway with most of their equipment until the first part of May. Because of rain they were held up about 40 working days in the Spring. Follow-

ing is a list of diesel equipment used on the job by Sugden & Sivier, Inc.:

5 TDT 23 Euclid Scrapers (2 with Cummins diesel, 3 Detroit Diesel); 2 TS-24 Euclid Scrapers (2 Detroit Diesels each); 1 DW-20 Caterpillar Scraper; 1 D-9 Caterpillar Crawler Tractor; 2 TC-12 Euclid Crawler Tractors (with 2 Detroit Diesels, each); 2 D-9 Caterpillar Crawlers; 1 D-6 Cat Crawler; 9 GMC Diesel Semi-truck Trailers; 2 Mack

Another twin engine Euclid—a model TC-12 crawler tractor—is one of the largest tractors used on highway construction. Here it is leveling off the shoulder.

* Diesel Progress Detroit Editor

Laying the first layer of concrete on one of the 24 ft spans for Denton Const. Co. is a Rex Paver powered by a GM Detroit Diesel. A Jaeger Spreader is close behind.



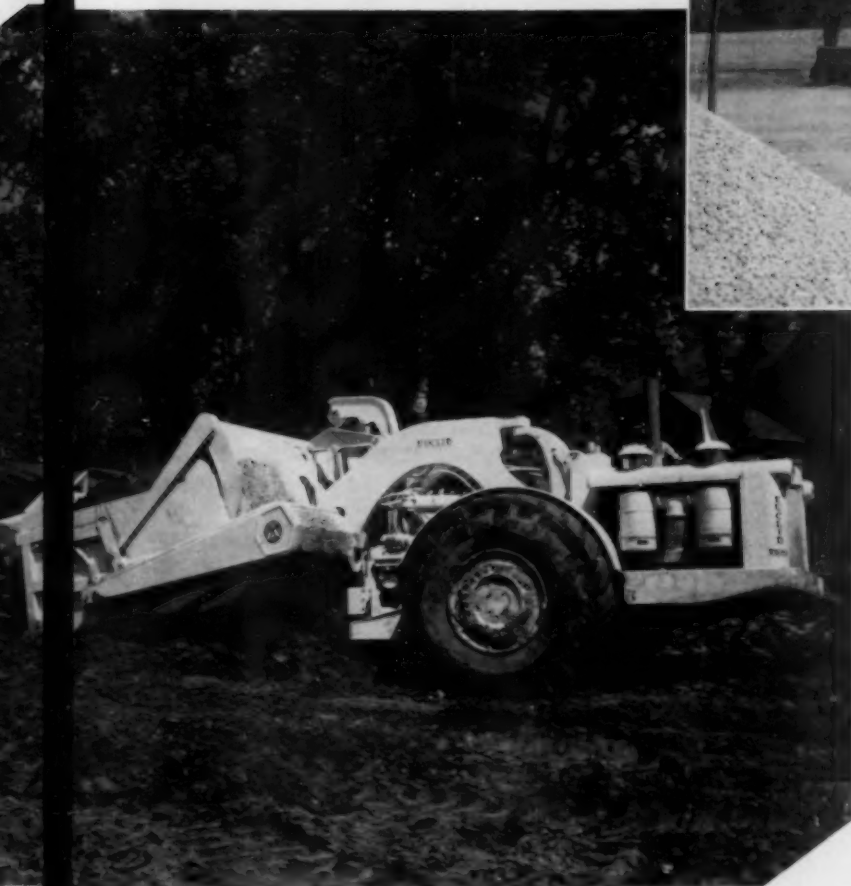
Diesel Semi-truck Trailers; 1 model 95 Northwest dragline (3 cu yd with model 21 Murphy diesel); 1 model 5 Northwest dragline (1 3/4 cu yd with a GM Detroit Diesel); 1 Super "99" Austin-Western diesel grader; 2 99-H Austin-Western diesel graders.

Equipment recently purchased for the project by Sugden & Sivier includes two TS-24 twin engine Euclid Scrapers and an Austin-Western Super "99" grader, all of which are being extensively used on the project.

The general area around Whitmore Lake is made up of many other lakes and small swamps within a few miles of the project. Off Jennings road, which crosses near the center of the project, Sugden & Sivier established a borrow pit where they



A Koehring 304 clamshell powered by a GM Detroit Diesel loads a new PX-4 Butler mixing plant. The old 2-lane US-23 lies in the background.



One of the new twin engine Euclid model TS-24 Scrapers recently purchased by Sugden & Sivier is shown scraping up its capacity of 24 cu yds on the 13 ft shoulder of the project.

were using a model 95 Northwest dragline with a 3 cu yd bucket and powered by a Murphy diesel. A succession of their 11 trucks were busily running back and forth carrying the fill to low spots and muck holes. The biggest share of the "fill" from the borrow pit was used for filling in spots where muck was excavated, sometimes running down to 35 ft in depth. Except for the several mucky spots the terrain was made up of an average mixture of sand, gravel and clay interspersed with small glacial boulders. Using a 50-ton Ferguson Compactor and a Buffalo-Springfield Compactor the road-site was compacted to 95% controlled density as required by the State of Michigan contracts.

One of the principal East-West roads coming into the town of Whitmore and crossing the new expressway a few hundred yards from the main part of the town is Barker road. A bridge has been planned for Barker road, and also for the Ann

Arbor Railroad, which intersects the project about a quarter-mile North of Barker. These two bridges will be constructed by Sugden & Sivier in concrete and structural steel, and a portion of the highway leading over the bridges will be black-topped.

To expedite the paving work the Denton Construction Company set up 4 brand new Butler PX-4 portable batch plants, each powered by a GM Detroit Diesel model 4-71 generator set. The 4 batch plants are adjacent to each other and are filled with 2 Koehring clamshells, a model 304 using a GM Detroit Diesel and a model 605 powered by a Caterpillar diesel.

Denton Construction expects to pave the divided highways at a rate of over a mile a week. The 9" concrete will be reinforced with welded mesh which will be laid 3 in. under the surface. The divided highways are 24 ft in width and 46 ft apart. The paving equipment that Denton Construction Co. is using consists of 2 Rex Pavers powered by GM Detroit diesels, 2 Jaeger Spreaders, 1 Hetzel combination bull float and finish machine and 1 Hetzel spray machine for curing. Denton Construction Company has the following diesel equipment at work on the project:

2 Rex Pavers (GM Detroit Diesel); 2 Austin-Western diesel graders; 1 model 605 Koehring dragline (Cat diesel); 1 model 304 Koehring (GM Detroit Diesel); 1 A-C HD-7 (with GM Detroit Diesel); 1 Cat payload; 1 GM Detroit Diesel generator; 9 GM Diesel trucks; 3 Mack Diesel trucks; 4 Butler model PX-4 mixing plants (powered by GM Diesel generator).

INLAND NAVIGATION COMPANY

By DOUGLAS SHEARING

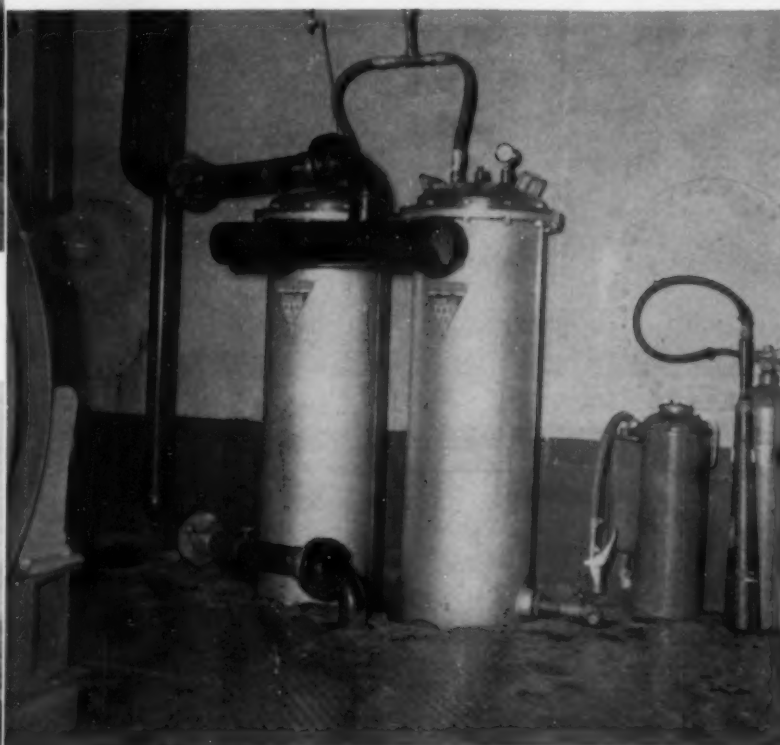
Closeup view of the *Rampant*. Note the high pilothouse for ease of visibility and the specially designed bow to form an integrated unit with barges



The twin screw tug *Rampant*, powered by two Cooper-Bessemer 1200 hp diesels, is pictured here pushing Barge 538, which was built as an integrated unit with the tug. This barge, a combination carrier 191 ft long, is used exclusively in river service.



Side view of the tug *Rampant*, one of the workhorses of the Inland Navigation Company. This vessel is powered by two Cooper-Bessemer 1200 hp diesels through twin screws.



Engine Life full flow lube oil filters serving each Cooper-Bessemer engine on the *Rampant*.

Giant Marine Operator In Pacific Northwest Specializes In Widely Diverse Towing Activities With Twenty-Two Towing Vessels Ranging From A 165 Hp Single Screw Tug To A 4050 Hp Triple Screw Diesel Tug.

FROM a one towboat operation on Grays Harbor, Washington some 25 years ago, Inland Navigation Company and affiliated companies has developed a highly diversified water transportation system on the Pacific Coast; an organization which now operates twenty-two towing vessels ranging from a 165 hp single screw tug to a 4,050 hp triple screw diesel tug and forty barges with a cargo capacity ranging from 500 tons to 5000 tons; all working for an organization whose operations extend from the Bering Sea on the North to the Mexican Coast on the South, and on many adjacent waterways in between. Inland Navigation Company and eight other affiliated companies make up this integrated water transportation system. Executive and Administrative offices are located in Vancouver, Washington. Capt. A. Lepaluoto heads the organization as General Mgr.

The fleet of vessels operated by this group is one of the largest on the Pacific Coast, and ranks at or near the top of the diversity of vessel types and cargo handled. The adaptability of this fleet may be better appreciated by a look at the varied cargoes transported. Bulk liquid cargoes such as: aviation gasoline, automotive gasoline, diesel fuel, heating fuels, bunker grade fuel oils, Bitumals, caustic soda, tar distillate, wood preservative, alkylate, and pipeline transmix are being transported with regularity. Dry cargoes such as lumber, plywood, wheat, barley, oats, wool, hay, sand, gravel, rock, logs, steel piling, wood piling, fabricated steel, frame dwellings, construction equipment, furniture, military landing craft, 300,000 gal. capacity petroleum storage tanks, as well as miscellaneous packaged commodities have been successfully transported on barges and vessels operated by the group. The companies also provide the only scheduled mail, passenger and general freight service on the Snake River, serving from the Lewiston-Clarkston area to the head of navigation. Vessels here serve the rugged Hells Canyon Area which is ranked as one of the most difficult waterways served by commercial vessels in the world.

As an integral part of its marine operations, the companies operate four bulk petroleum terminals located at Pasco, Washington; Umatilla, Oregon and the Dalles, Oregon, all on the Columbia River and at Empire, Oregon on Coos Bay. The total storage capacity of these four terminals is approximately 20,000,000 gals. The terminals provide interchange facilities between barges and other carriers such as rail, truck and a petroleum pipeline. The companies provide a common carrier barge and towing service on the Columbia, Willamette and Snake Rivers, and along the Pacific Coast. Normal operations call for tugs and barges, with the familiar Indian Head insignia of

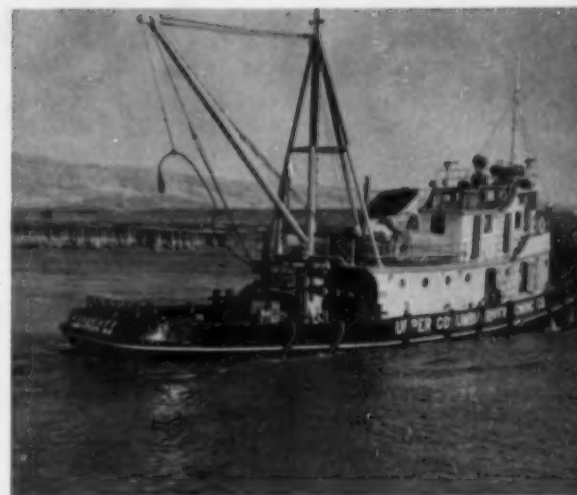
the companies, to be dispatched for operation to such widely separated areas as the icy waters of the Bering Sea and the tropical waters off of Baja, California. The demands of such diversified operations call for exceptional equipment and exceptional "know how" on the part of operating personnel. The success and growth of the companies testify to these possessions.

The companies build much of their floating equipment at their shipyard, located on the Columbia River at the Dalles, Oregon. Facilities there include a floating drydock, marine railway and a diesel engine overhaul shop as well as the group's engineering staff. A product of this organization has been the tug *Winquatt*, a triple screw sea going tug powered by three Enterprise diesel engines, each rated at 1350 hp. This tug ranks as one of the most powerful on any ocean. A recent job completed at the group's yard is the tug *Nez Perce*, a five screw diesel tug powered by five GM 6-71 diesels, and designed for shallow water towing service at a draft of four ft. The group's tug *Rampant* is typical of the tug design used on Upper Columbia River for push towing of barges. This tug is twin screw and is powered by two Cooper Bessemer diesels rated at 1200 hp each. Operations on the Upper Columbia River extend to Pasco, Washington, which is located some 325 miles from the mouth of the river. A considerable portion of this waterway is still untamed and the narrow channels, restricted depth and fast current require tugs of substantial horsepower for safe navigation. During the low water stages on the river, tugs such as the *Rampant* are limited to single loaded barges on their upstream passage and the loaded draft of the barges restricted to six ft. Many of the group's barges operating on the Upper Columbia River are of a combination design—transporting bulk petroleum cargo on the upstream voyage and a bulk grain cargo on the downstream voyage.

The dependable performance given by the diesels in the Inland Navigation fleet help in no small part to assure the success of the widely diverse operations over difficult navigating conditions.

Additional Details on tug *Rampant*

Horsepower	2400 twin screw
Engines	two 1200 hp Cooper-Bessemer diesels
Construction	steel
Length	99.5 ft
Beam	40.3 ft
Depth	10.5 ft
Draft	4.5 ft
Tonnage	360 gross tons
Generators	one 60 kw and one 50 kw



The sea going tug *Winquatt* is triple screw tug powered by three Enterprise diesels rated 1350 hp each. This tug rates as one of the most powerful on any ocean.



The tug *Nez Perce*, a five screw diesel tug powered by five GM 6-71 diesels, shown in the rough water at Big Eddy.

The 4050 hp tug *Winquatt* with a combination five barge tow at the lower entrance to the Bonneville Dam locks.



THE POMME DE TERRE DAM

By L. H. HOUCK

THE initial \$800,000 construction phase of the \$18,700,000 Pomme de Terre Dam near Hermitage, Hickory county, Missouri, has been started by the George Bennett Construction Co., of Kansas City, Kansas. Right now the roar of the diesels and the hammer of the rock drills fill the air to make a 1957 shot heard round the world. Eventually this dam and reservoir will center in a 21,000-acre recreation area. The reservoir will be stocked with fish as it becomes a permanent conservation lake and the bluffs and hills which lend themselves to an attractive shore line of 100 miles will attract thousands year after year. It is awe-inspiring when you think of the unborn thousands who will enjoy this outdoor paradise when the diesels and the sweat will have trailed off into the dim past. But right now it takes undiluted

power, trained crews, big dumpers and hard-faced dipper teeth on the end of the shovel's stick.

Pomme de Terre is a project under the supervision of the Kansas City District, U.S. Army Corps of Engineers. Pomme de Terre River, major tributary of the Osage, rises near Eskridge, Kansas, and then flows eastward 495 miles to empty in the Missouri River near Jefferson City. The source of the Pomme de Terre, which flows north, is near Marshfield and the dam site is 3 miles south of Hermitage, 140 miles southeast of Kansas City. When completed the dam will be used primarily for flood control, improvement of low-water flows and water supply and recreation. It is one of nine authorized by Congress in the Osage basin. Hydro-electric power is authorized in three of the dams,

48

The tough Murphy diesel puts plenty of power on the dipper stick which makes big bites like this possible.



including Pomme de Terre, but the power phase will be deferred for the present. The initial appropriation of \$800,000 was authorized by Congress and approved by President Eisenhower on July 2, 1956 when he signed the bill.

The dam with a main embankment 956 ft wide at the base and 155 ft above the streambed, will be composed of rock and earth-fill embankment in the main section that stretches across Pomme de Terre Valley. It will have an earth-fill dike on the left abutment, and an uncontrolled chute spillway through right abutment and gate controlled outlet tunnel for flood control and stream flow releases. The overall length adds up to 7,420 ft, including 4,630 ft in the main embankment and 2,790 ft in the dike portion. It will drain 611 sq miles or 74 per cent of the Pomme de Terre basin.

The reservoir at full pool will have a surface area of 16,100 acres, at an elevation of 874 ft above mean sea level. The permanent lake will extend about 19 valley miles upstream and 13 miles on Lindley Creek. Because of the natural beauty of the location, the recreational aspects will be stressed and the Corps of Engineers will eventually provide access roads, parking areas, camping areas, boat launching ramps, drinking water and sanitary installations. Geo. Bennett Construction Co., started its \$800,000 contract in February, 1957, and work is to be completed by the end of the year.

The initial phase involves 408,000 cu yds of foundation excavation and 394,000 yds of rock excavation. The rock sections are being broken up for loading with Hercules nitro-carbo-nitrate and 60 per cent gelatin dynamite, with between 800 and 1000 lbs being loaded into 80 to 90 12-ft holes and detonated in one blast with 0 to 7 electric delay blasting caps and a Hercules blasting machine. Holes are drilled with Joy drills powered with a 600 cu ft Air-Vane rotary compressor powered with a GMC Series 6-71 diesel.

The broken rock is picked up by two Northwest power shovels with 2½ cu yd dippers and powered with Murphy diesels. The shovels load into a mixed fleet of Euclids powered with Buda and GMC diesels, and 24 cu yd Movealls pulled by Caterpillar tractors and some Caterpillar combinations of DW 21 with PR 21's. When the job was visited by DIESEL PROGRESS, the contractor was just getting underway. Other equipment was being moved in and bad weather was making the operation difficult.

F. M. Fahy, is resident engineer for the U.S. Army Corps of Engineers, and assisting him are Roy Dean, embankment inspector and Charles Byers, construction inspector. Glenn Kessler is general superintendent for Geo. Bennett Co., and Jack Bowerman, is Bennett's engineer.

Rock was being drilled out and blasted in 12 ft. benches. Rock was seamed partly with clay and contained numerous pockets. Driller is drilling on the next ledge which will be blasted out with between 800 and 1000 pounds of Hercules explosives loaded into 80 to 90 holes 12-ft. deep.

49

Big Northwest works on the top layer of the rock job. Excavation at this point goes down some 80 feet.

(L to R) Roy Dean, embankment inspector; F. M. Fahy, resident engineer, U. S. Army Corps of Engineers, and Charles Byers, construction inspector.



BARTON, VERMONT

The Progressive Village of Barton is Saving Money and Making Money with Diesels.

By W. L. BODE

DIESEL generator sets are supplying low cost, dependable electrical energy to Barton, Vermont, a community long plagued by lack of water to drive its hydro generators to full capacity. Located in North Central Vermont, the Village of Barton is the hub of the surrounding agricultural territory. Each year many hundreds of tourists are attracted to the area to take up summer residence along the miles of lakeshore on nearby Crystal and Willoughby Lakes. This increases the normal village population of approximately 1300 permanent residents. These people, as well as the residents of the Village of Orleans (of comparable size) whose own municipal system purchases all of its power from the Barton utility, look to the Barton power plant as an economical source of power. The Barton power plant is located on the Clyde River in West Charleston, 15 miles to the north of the Village of Barton itself: Until the recent addition of diesel equipment, all power was generated by two 700 kw hydro generators. The plant, however, is a "run of the river" plant with very little water storage facilities. That is, because of the small amount of stored water behind the plant, the generating capacity is limited by the amount of water actually flowing in the river at any given time.

With the growth of the system's load (1955-1200 kw peak; 4,200,000 kwh produced) and the continued shortage of adequate water, especially during the dry summer months, Barton's hydro plant could not produce all of the system's power requirements. As a result, it was necessary to purchase an average of over 1,000,000 kwh per year, for several years, from a neighboring utility. Since the maximum demand of purchased power coincided with the neighboring utility's peak, this power proved to be fairly expensive and threatened to endanger the profitable operation of Barton's Municipal System. When the situation was brought to the attention of the village trustees they immediately sought a course of action to remedy it. A complete analysis of the system's past history and estimated future growth was made. Hydro, steam and diesel generation were considered as sources of additional power, along with the case for and against each. The final conclusion was drawn in favor of powering the new facilities with diesel. Furthermore, based on recommendations made by Casellini-Venable Corp., Caterpillar Dealer in Barre, Vt., it was decided that the maximum efficiency of operation could be obtained with an installation consisting of four 350 kw units.

The trustees were convinced of the soundness of the recommendations included in the report given

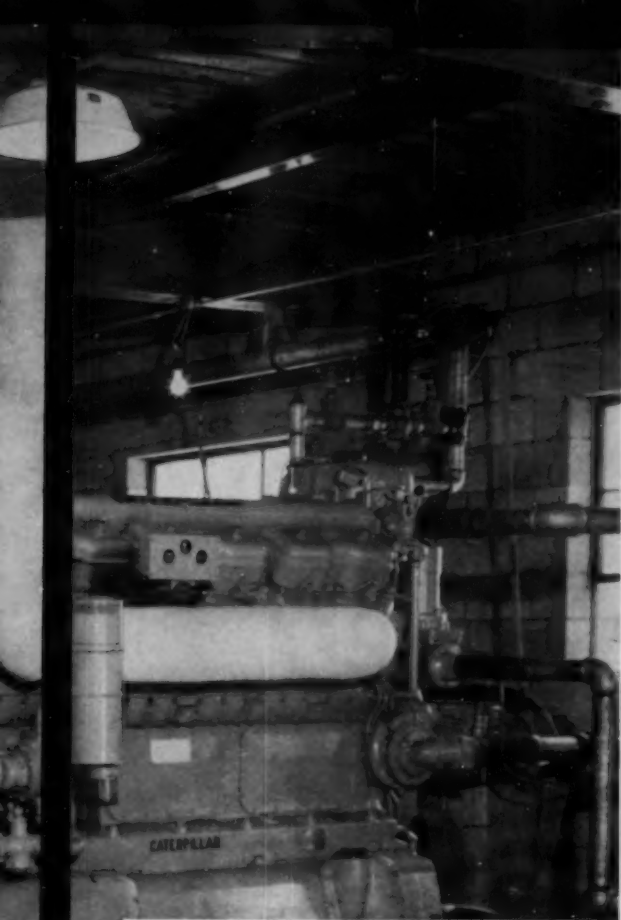


The four Caterpillar D397 electric sets which are supplying Barton, Vermont, with low-cost, dependable electric power, are checked by (l. to r.) G. L. Nadeau, Barton trustee; Clinton Bennett, operator; and E. M. Brown, trustee.

them, and called a special village meeting in order to put the issue to a vote of the people. At a meeting attended by one of the largest turnouts of townspeople ever experienced at Barton, 94% of the total vote favored the new diesel plant. The people of Barton were not uninformed about diesel generated power prior to their vote. A year previous a Caterpillar D397 Mobile Electric Set had been demonstrated in Barton. Decision was made to combine the new plant with Barton's power facilities at the original West Charleston site, in order that additional labor need not be hired to operate a divided power source. This method proved considerably more economical in spite of slightly greater power losses in transmitting the power back to Barton Village. To house the new generating equipment it was necessary to construct a concrete block building adjoining the original power plant.

Each of the four Caterpillar diesel electric sets installed in the new plant by Casellini-Venable

Corp., is driven by a D397 turbocharged engine. The D397 is a 12 cylinder, 5 $\frac{3}{4}$ inch bore, 8 inch stroke, 1200 rpm engine. The turbocharger used on the engine increases its efficiency by utilizing otherwise wasted exhaust gas energy. This also lowers the heat load on the cooling system by removing some of the heat of combustion. Important to Barton is the fact that the turbocharger will result in low specific fuel consumption. Fuel costs per kw will be lower than they could obtain from a naturally aspirated or roots blown engine. Each engine drives a Columbia 350 kw, 2400 volt, 3 phase, 60 cycle generator, with a direct connected exciter. The switch gear was supplied by Electric Machinery Co. and consists of one panel for each generator, plus a small swinging panel for synchronizing equipment and a main circuit breaker panel for disconnecting the plant from the 2400/-13200 transmission sub-station located adjacent to the plant. An air compressor, driven either electrically or by a gasoline engine, supplies air through two receivers to the electric sets vane-type



air starting motors. Engine cooling is accomplished by heat exchangers. Cooling water is available from three sources: the penstock, tailrace, or a stream adjacent to the power plant. This insures an adequate water supply at all times. Diesel fuel is supplied by gravity feed from a 125,000 gallon tank.

Ease of maintenance of these units was one of the prime considerations in the installation. A generous amount of space has been allowed around each of the units. This will not only speed up any necessary maintenance, but will improve cleanliness within the plant and increase operator safety. In addition, the building was constructed larger than was necessary to house these units. Thus, while this space will be used for temporary storage facilities at present, there is adequate room for expansion in the future.

The four Caterpillar electric sets, producing 1400 kw provide the plant with enough additional power to allow for community growth and greater use

of electrical appliances. Under present conditions the load is such that one of the four electric sets will be used as a standby or reserve unit. Standby units will be alternated in order to clock about the same number of hours on all engines. The multiple engine arrangement conforms well with Barton's power plant requirements. The 350 kw units allow each generating unit to operate at its most efficient output, an important consideration.

The increased efficiency coupled with the availability of a standby unit creates an ideal situation. It is estimated that the new diesel plant will be required to operate approximately 4000 hours per year to supplement the original hydro plant. This, of course, will depend on the amount of water flowing in the Clyde River, and on the load growth of the Barton system. During this time the new diesel installation is expected to result in a saving of 10 to 15 mills per kwh of energy produced. This installation will allow Barton to continue its good service at a reasonable cost to its consumers.

Barton, Vermont's diesel generators are housed in a concrete block building, which is large enough to provide plenty of room for future expansion. This roominess also adds to the installation's cleanliness and safety.

WHY BUY A TURBOCHARGED DIESEL?

**Hints on Economics and Advantages You May Expect to Receive
When You Buy a Turbocharged Diesel and a Few Suggestions As to
How to Get the Most Out of a Turbocharged Diesel When You Buy It.**

By ROBERT BUTLER*



*Sales Manager The Garrett Corporation's AiResearch Industrial Division.

ESSENTIALLY, the function of the turbocharger is to push into the cylinders of an engine more air, weight-wise, than the engine would be able to inhale by the vacuum created during the downstroke of its pistons. The more air put into the cylinders, more fuel can be burned, therefore, the more power can be obtained from one cylinder charge. In brief, the major objectives of turbocharging are four: (a) boosting engine output (horsepower) at rated operational conditions; (b) improving engine output at high elevations or at high ambient temperatures; (c) savings in fuel costs through reduction of specific fuel consumption; (d) reduction of maintenance costs by running a cleaner engine. Turbocharging, by providing the engine with more air, offers an opportunity to materially improve engine combustion characteristics. This influence of improving combustion characteristics outweighs the influence of increased fuel input. Therefore, a turbocharged engine generally works cooler than the non-turbocharged that has less fuel input. It would be of interest to operators to know that turbochargers present no particular maintenance problems. The turbocharger will probably contribute to longer periods between engine overhauls, and itself needs only periodic inspections for cleaning purposes. The turbocharger should be considered just like a part of the engine, such as the oil pump. As to the actual operation of turbocharged diesel engines, less gear shifts are needed

and more use is made of higher gears. When in need of greatest power, as in a lugging situation, the turbocharger is at its best, since there is more energy coming from the exhaust to drive the turbocharger. For the operator using a turbocharged diesel engine for the first time, it is well to recognize that, by virtue of its inherent characteristics, a high-speed turbomachine such as the turbocharger has a certain rotor inertia. This means that it cannot instantaneously follow rapid load changes. During a short transition period, there is not enough air in proportion to the full load fuel injection rate. During transition from idling to full power the operator would, therefore, do well to depress the power pedal somewhat gradually. This gives the turbocharger a chance to come up to speed and will thus result in better fuel-air proportioning during acceleration. Where rapid acceleration is necessary, controls have been developed to maintain higher rotor speeds under light load conditions, therefore providing ample air for stepped-up acceleration. Because of rotor inertia in a free-floating turbocharger, it is beneficial not to allow the engine-turbocharger system to drop too much in energy level during gear changes. Rapid, fluid gear changing will keep the system on a high temperature level and consequently minimize the drop-off in turbocharger speed. This avoids a new, complete acceleration cycle, accompanied by engine smoking, during marginal air-fuel ratios.

This D9 Tractor typifies the successful use of a turbocharged diesel. The turbocharger pictured is an AiResearch model A-60.





The new 3200 shp Cleveland Diesel towboat, the M/V *Philip Sporn* owned and operated by the American Barge Lines Company, was christened July 3, 1957, at Jeffersonville, Indiana. The M/V *Philip Sporn* was designed and built at the Jeffersonville Boat Company.

THE M/V *Philip Sporn*, newest towboat to go into service in American Barge Lines Company's fleet was christened early in July at Jeffersonville, Indiana by Mrs. Philip Sporn, wife of Philip Sporn, President of the American Gas and Electric Company for whom the new towboat was named. Among those who participated in the christening ceremonies, were the Honorable Homer B. Capehart, senior United States Senator from Indiana, the Honorable Thruston Morton, junior United States Senator from Kentucky, Patrick Calhoun, Jr., President, American Barge Line Company, Philip Sporn, President, American Gas and Electric Company and Thomas E. Hughes, General Manager, Cleveland Diesel Engine Division, General Motors Corporation. The M/V *Philip Sporn* was designed and built by the Jeffersonville Boat and Machine Company of Jeffersonville, Indiana, a subsidiary company of the American Barge Line Company. The M/V *Philip Sporn* is similar to the design of the M/V *Andrew P. Calhoun*, which has been in service for about one year.

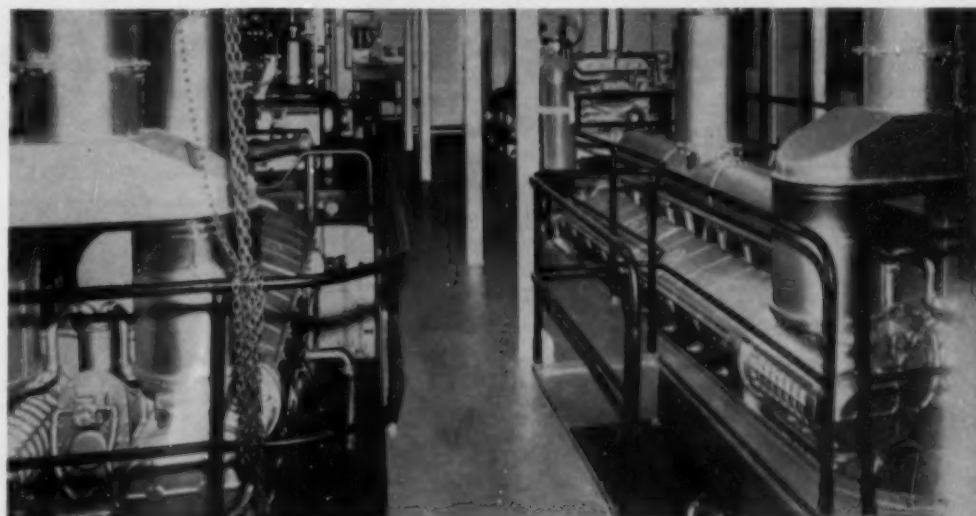
According to Patrick J. Calhoun Jr., President American Barge Lines, the M/V *Philip Sporn* "was designed to give maximum efficiency in operation for the American Barge Lines. The American Barge Lines fleet annually haul nearly 7,000,000 tons of freight on the Ohio, Mississippi and tributaries, a system totaling 10,000 miles." The M/V *Philip Sporn* is 160 ft in length and 35 ft in breadth. The normal operating draft is 8 ft 6 in. and the displacement is 815 tons. The new towboat is powered with two, 16 cylinder, Model 567C Cleveland Diesel, 2 cycle diesel engines. Each engine is rated at 1600 shaft horsepower at 800 rpm with a combined rating of 3200 shaft horsepower. The ratings on the 567C engine are conservative and are under the maximum rated horsepower. This reserve power insures long life for pushing tows of 1,000 ft in length and each ton pushing more than 20,000 tons of cargo. Each engine drives, through a reverse reduction gear with 4:1 ratio, an 8 ft diameter propeller. Each propeller rotates

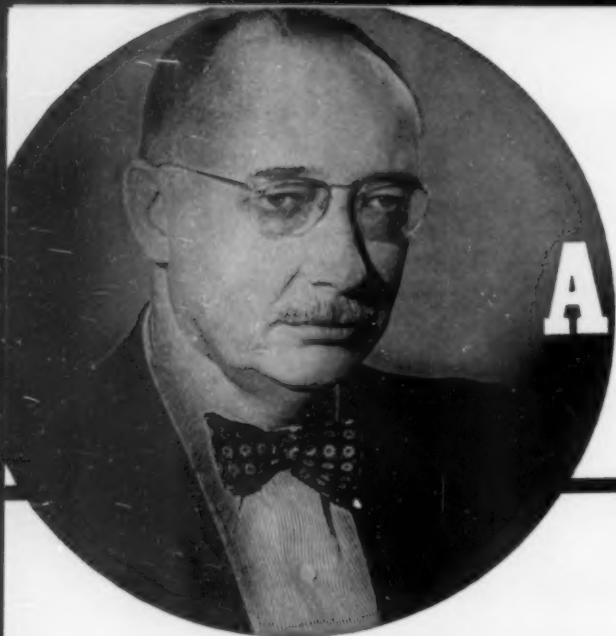
at 200 rpm in a stainless steel Kort nozzle. The auxiliary equipment consists of two, 100 kw, ac, Model 6-110 General Motors diesel generator sets. These generator sets will supply power for the ship's service, two 7½ hp electric capstans and a one ton derrick. The capstans and the derrick are located on the first deck. The crew's quarters and the all-electric galley are placed on the first and second decks. The crew's quarters consist of 2 single staterooms, for the Master and Chief Engineer, 10 double staterooms and two lounges.

In the pilot house are all the controls and modern navigational aids. The tow is steered by levers operating a pneumatic control system, which, in turn operates large hydraulic rams which turn the rudders. The engine speed and propeller rotation are remotely controlled from the pilot house by a similar system. Also located in the pilot house is a ship to shore 85 watt radio and a 16 in.

screen radar scanner for night operation or when there is poor visibility. Placed above the pilot house are two 19 in., 45 amp carbon-arc searchlights. At the conclusion of the colorful christening ceremonies, Mr. Philip Sporn, President, American Gas and Electric Company said, "I am deeply moved by the honor bestowed upon me by naming this new towboat after me and so associating my name with it in its work in moving the many highly essential and diversified products along this great arterial highway extending all the way from Pittsburgh down to New Orleans. I know that in wishing the new towboat a great and productive career as a transporter of freight and fuel on the Ohio River, I am wishing for it what its owners have visualized for it—a great and happy career that will contribute not only to the prosperity of its company but even more, contribute to the welfare and prosperity of the Ohio Valley, its people and to the welfare and safety of our country."

An engine room view of the new American Barge Lines Company towboat, the M/V *Philip Sporn*. The *Philip Sporn* is powered by two 1600 shaft horsepower, 16-cylinder, 2-cycle Model 567C Cleveland Diesel engines equipped with Marquette governors.





AUTOMOTIVE DIESEL PROGRESS

A COMMENTARY BY MERRILL C. HORINE

Merrill C. Horine, for 38 years a member of the Society of Automotive Engineers, has been actively engaged in automotive engineering, sales promotion and training, advertising and editing of automotive publications since 1907. He has contributed numerous papers on diesel and allied subjects to the SAE and other organizations. An officer in the Air Service in World War I, he was a consultant to the Chief of Ordnance and the Automotive Division of the War Production Board in World War II.

Do New Cycles Threaten Diesel's Future? Part II.

SO far, we have examined the free-piston and the gas turbine engines, in comparison with the modern diesel from the standpoint of automotive application. In Part I, we considered the operating characteristics, such as Fuel Economy, Compactness, Light Weight and Flexibility. Aside from these, important objectives which a good automotive powerplant must attain are those of Reliability, Ease of Control, Minimum Vibration, Smoke and Smell, and Maintenance.

Reliability. Consistent and dependable performance is of growing concern to operators as the efficiency of their operations improves, since down-time becomes more expensive as earning capacity becomes greater. In this respect the free-piston engine enjoys an advantage over the gas turbine, since its considerably lower turbine inlet temperature permits the use of non-critical materials for the turbine buckets and it dispenses with the rotary compressor. Certainly the diesel has demonstrated its reliability beyond question. Complicated as it may seem when compared with the basic turbine and free-piston generator, with all of the accessories essential to all three types and considering that of the large number of parts in a diesel, the majority consist of duplicates of a few basic kinds of parts, there is little to choose between them. Reliability in any mechanism depends not alone upon basic simplicity; but to an even greater degree it is the result of development and refinement of design, materials and processes which require much time to perfect. Doubtless, given the attention and support essential, these indispensable provisions in due time may raise the reliability of the free-piston and gas turbine to standards comparable with diesels.

Ease of control. To an extent far beyond that required for stationary, marine or railroad usage, the automotive powerplant requires ease and certainty of control. Most of the operator's attention must be devoted to the road and the traffic thereon. He must keep his hands on the steering wheel, his eyes on the road. The controls must be simple, of the minimum number and as nearly

automatic in action as possible. He has little time to watch gauges or to interpret their readings. With these other types, the ease of control of the diesel is, at present at least, replaced with a galaxy of controls and instruments requiring constant concentrated attention. Gone is the simplicity of the variable-speed governor to control the rate of power output. Gone is the simplicity and responsiveness of starting and shut-down. Cooling and lubrication become considerably more intricate and critical. Starting, which in a diesel is so easy and dependable, becomes a major difficulty—particularly for the gas turbine. While after-cooling is not a problem in an aeronautical engine, it will probably become a necessary additional complication in an earth-bound turbine-driven vehicle.

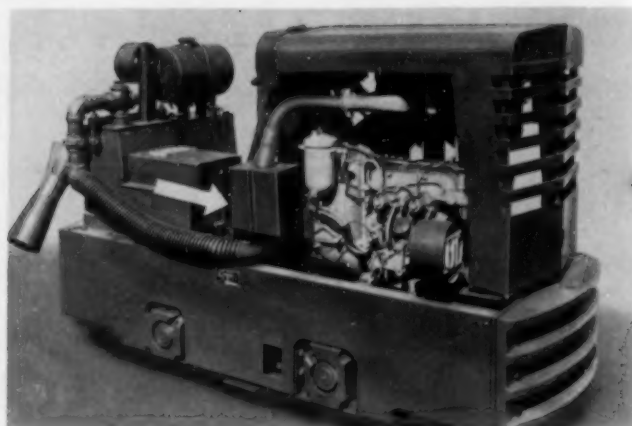
Vibration, Smoke and Smell. An automotive powerplant should be smooth and quiet in operation and must avoid objectionable smoke, odor and the emission of toxic gases or blasts of exhaust at hazardous temperature. Without doubt the smooth-spinning turbine and the balanced thrust of the free pistons with their air-cushioned bounce cylinders will endow these engines with smoothness far superior to that of present diesels. In commercial and industrial applications, to which all three types appear to be limited, however, present diesels appear to be so satisfactory in this respect that such superiority would appear to be of academic interest. None of the three is outstanding from the standpoint of noise, although modern diesels with 125-sones muffling systems have the advantage at present. The high-pitched whine of the turbine may be amenable to suppression in time; but the scream of the gas turbine's compressor seems a more difficult matter. Even the free-piston generator, which might be expected to be quiet, has its characteristic tone and in both turbine-driven engines, the drastic gear reductions required will be extremely difficult to silence without serious loss of efficiency. Like the diesel, the free-piston engine is plagued with the sharp rapping sound of the injection system.

Smokelessness promises to be a prime virtue of the free-piston engine. Exhaust from the gas tur-

bine would seem to have the opposite tendency, with the diesel in between. Toxicity of exhaust gases likewise, being the effect of imperfect combustion, would seem to be a problem only in the case of the gas turbine. Not the least of the problems besetting the application of the gas turbine to motor vehicles is that of the superheated exhaust blast. Not only is this emission of much larger volume for the same horsepower than in the other two; but it is at higher pressure and dangerous temperature. Obviously from the standpoint of public safety it cannot be projected horizontally; but must be directed well upward. Even so, it is a hazard in passing under trees, bridges—particularly those with open grating floors—and in and close to buildings.

Maintenance. One great advantage enjoyed by the diesel is its essential similarity to the familiar gasoline engine. This makes maintenance easier and more dependable because of the widespread acquaintance by mechanics. From the examples of free-piston and gas turbine engines so far disclosed to view, accessibility leaves much to be desired. Certainly the availability of tools and fixtures for diesel maintenance can hardly be matched by those special types which the other engines will require for many years.

Only time will tell how much flexibility, reliability, durability and safety can be built into these speculative power plants; but it is safe to say, in the light of the time which it has taken to bring diesels up to present satisfactory levels in these respects, that this will not be accomplished overnight. The free-piston engine is 30 years old and so far only a couple of hundred of all types have been built. The turbine goes back to the days of Hero of Alexandria. He would be hardy indeed who would deny the possibility of either of these engines being perfected eventually to a point where they might displace the diesel; but for the present they appear to offer no immediate threat. For a long time to come they will certainly demand a price far above that of the modern automotive diesel.



Catalytic Exhaust Purifier

Small diesel locomotive for mines and tunnels features Dieseler catalytic exhaust purifier. A 1½-ton underground diesel locomotive for mining and tunnel work, with fumes from its engine exhaust removed by a catalytic purifier, is being introduced by the Hack Engineering Company of Denver, Colo., as part of its line of Universal diesel locomotives. The catalytic purifier, known as the Dieseler, is made by Oxy-Catalyst, Inc., of Wayne, Pa. Oxy-Catalyst intro-

duced the Dieseler in 1954 as an effective means of reducing noxious and irritating exhaust fumes of 4-cycle diesel engines. A hydraulic driven unit, the new Universal locomotive is simple in construction, easily maintained and generates equal speed and power in both directions. It develops gradual power, important in picking up train loads. Powered with a Deutz diesel engine of 18 hp, it has a draw bar pull rated at 650-700 pounds.

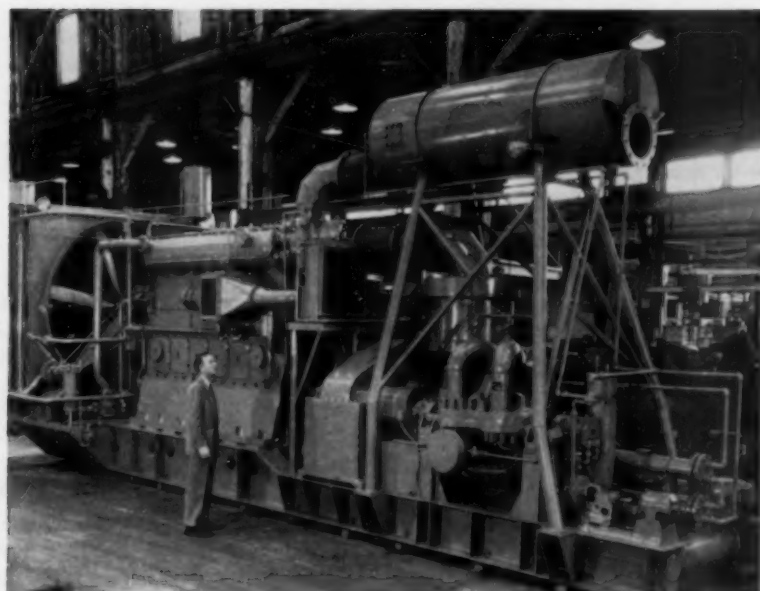
Carol Dean Gets Added Power Boost

Harvey, La.—In an installation believed to be the first of its kind, the *Carol Dean*—a single screw towboat powered by a Cleveland Diesel engine model 16-278A—was converted to a triple screw towboat by the installation of two (2) GM Detroit Diesel 6-110 tandem twin engines. These engines were furnished by the George Engine Company, Inc., well-known GM marine, oil field and industrial engine distributor on the Harvey Canal. Installation work was performed by the American Marine Corporation. The *Carol Dean* has a colorful history of towing work. Constructed by Smith Marine Corporation in Houston, Texas — her original dimensions were 100 ft x 7 ft 8 in. In 1954, she was

widened by Alexander Shipyard to her present size—100 ft x 30 ft x 8 ft 6 in. Owner of the *Carol Dean* is Captain J. Clyde Dean of Plaquemine, La. dba. Red River Barge Lines. He is well pleased with her performance as a triple screw diesel towboat, and remarked, "Now I have a real pushing towboat". Actually, the installation of the new GM tandems does give the steel hulled *Carol Dean* real "get up and go". The additional power boosts her total available shp to 2756. To again quote the owner and operator Captain Dean: "I am highly satisfied with the added power—the installation of these tandem units is neat and compact."



Shop view of one of the four portable pumping units built and assembled by Enterprise for use in Kuwait. Air-Maze air filter; Maxim silencer; Young Radiator heat exchangers; Winslow filters; Amot thermostats.



Portable Pumping Unit

Four of the largest diesel powered pumping units ever shipped from the United States have left San Francisco, destined for the tiny sheikdom of Kuwait in the Neutral Zone of the Middle East. The four portable 1000 horsepower, 600 rpm diesel power plants produced by the Enterprise Engine & Machinery Co. will be used by the American Independent Oil Co. to pump oil from the rich new Wafra Field wells to the Persian Gulf coast. The four engines were hauled from Enterprise's San Francisco manufacturing plant to that city's docks and with a Smith-Rice 100 ton crane were loaded aboard ships of the Java-Pacific Lines for the long trip to the Aminoil Middle East fields. The Neutral Zone to which the diesel power plants were shipped consists of a 2500

square mile coastal strip which lies on the Persian Gulf, between its sponsors, Kuwait and Saudi Arabia. Production from the Wafra Field oil reserves is equally shared by the American Independent Oil Co., which purchased the four Enterprise engines, and the Getty Oil Co. In 1956 Wafra's oil was produced at the rate of 39,000 barrels a day and with an estimated 650,000,000 barrels in reserve, production is expected to increase sharply the rest of this year.

The oil is pumped from the wells, overland, 35 miles through a pipeline called the "Wafra Shipping System," to a terminal, Mina Abdulla, located on the coast. It is along this pipeline system that the Enterprise engine pumping units will be stationed.



EASTERN DIESEL OBSERVATIONS

A COMMENTARY BY ARNOLD B. NEWELL

Arnold B. Newell, a third generation American, was born near Seattle, Washington of pioneer stock. He obtained his engineer's license at 21. Sailed as chief engineer on one of the first ocean-going motorships built in the U.S.A. In 1924 he joined New York Shipbuilding Company in diesel advisory capacity, tested and took to sea New York-Workspoor diesels, supervised operation of shipyard owned vessels, then in 1927 joined Ingersoll-Rand as diesel field engineer. Became associated with "Motorship" in 1929. Subsequently became managing editor of "Motorship" and "Diesel Power," then vice-president and general manager.

Stationary Diesels Afloat

EXCEPT for the sales engineers in the field who do the actual selling, there exists an impression that the line of demarcation between marine and stationary diesel sales is drawn between propulsion diesels on one hand and various other types of diesels on the other. Unquestionably the most conspicuous example of such erroneous impressions are the huge offshore drilling rigs. These are floating structures designed by naval architects and built in shipyards. They carry as much or more diesel horsepower than the average towboat but reports of vessels under construction make no mention of the power because it is not for propulsion. Less conspicuous examples are fleets of oil barges and tugs in which the diesels on the barges pump the cargo and their combined power may total as much as the propulsion engines in the tugs which tow them.

Floating cranes, grain elevators and drydocks are good examples of the use of stationary diesels afloat. Despite all and sundry applications of these kinds afloat, one application that has not yet been fully developed is the floating emergency power plant. Floods have not yet been controlled. The modern skid mounted generating sets can be carried on a relatively small inexpensive barge with enough electric generating capacity to provide emergency service in every city where floods constitute a menace. These are only a few of the actual and potential uses of diesels afloat other than propulsion engines. For maximum volume of diesel sales, the ramifications of this market deserve constant evaluation.

Train Heating

The railroads have not yet achieved the ultimate in fuel economy. The struggle continues and apparently one substantial saving has been overlooked. If the diesels in locomotives can be equipped to use the Vapor Phase system of cooling, a substantial amount of the heat now dissipated to the atmosphere via the radiator cooling system could be diverted to train heating. The load on the locomotive diesel is not constant and for that reason the heat recoverable from the jackets varies considerably. An oil fired boiler now carries the load. Waste heat from the engine

jackets in the form of hot water circulated into the heating boiler would reduce fuel consumption. The Vapor Phase system could be made to improve overall engine performance, especially when economy fuels are used such as blends of residuals. Since passenger trains must be heated and diesel locomotives are throwing away more than enough to do the job, a nice little heat engineering problem is created.

Agricultural Diesel Equipment

In the heavily populated areas of this country dieselized equipment plays a stellar role in the field of agriculture. On the one hand, it is converting farm lands into housing developments. Long Island is the example of examples. Two passes of a diesel dozer and a basement is excavated. As the cities encroach upon the farming areas, the agriculturists are endeavoring to escape the juggernaut by consolidations and improvement of farms. This has become a matter of survival. Without diesels the farms in the East cannot survive. Therefore, we often find the farm equipment dealers sales volume rivaling that of industrial equipment sales. It is a spreading and growing trend that augurs well for the diesel.

Fishermen Need Engineering Help

I am afraid too few engine people look upon a fishing boat as a cargo vessel. None the less it's a fact that a boat can only bring in as much fish as it can carry regardless of how good the fishing is and how much can be caught. The vast majority of fishing boats are powered by heavy slow speed diesels. Hulls are good. It has been demonstrated that to repower with lighter diesel machinery can increase the fish carrying capacity as much as 20 per cent without sacrifice of speed. The boat operates with the same number of men. They work harder to bring in small catches than they do for full holds. When fish are running well fishermen make a killing. That is when the extra 20 per cent means more profit for owners and bigger shares for the fishermen.

To re-power the older boats with lighter diesels usually reduces maintenance expense. Some of the older engines are low in thermal efficiency and therefore high in fuel consumption. A modern

engine saves on the fuel bill. Fishermen know fishing better than they know the economic advantages of more modern power. They need help and guidance in the matter of improving all around performance. The marine diesel sales engineer who understands both fishing and engines can help fishermen to increase carrying capacity and reduce operating expenses and increase profits.

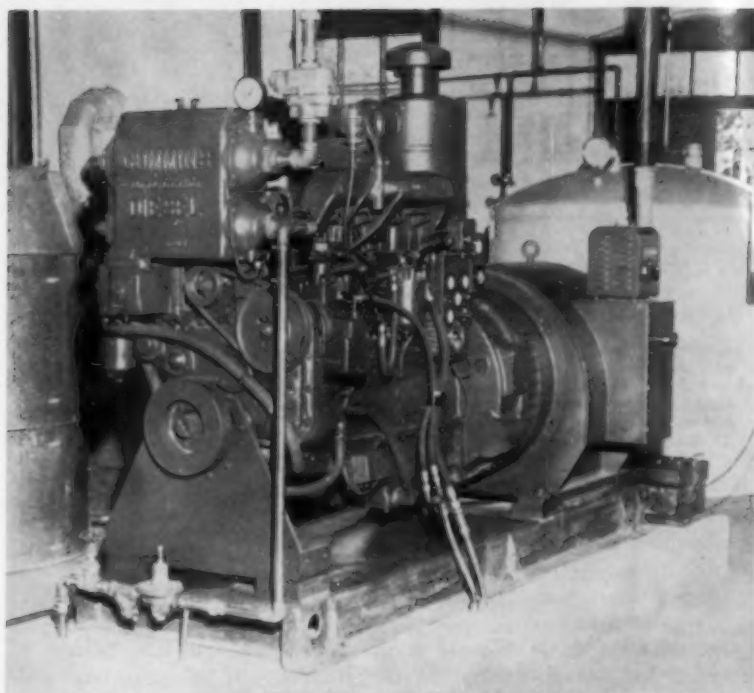
The Polling Tanker Conversions

Rehabilitation and repowering of vessels over 25 years old is no longer common practice in these days. One reason is the scarcity of old hulls still in useable condition. This is especially true of tankers in general and refined oil carriers in particular because gasoline cargo leaves the tank interior wide open to attack by the sea water ballast alternately carried. In the case of two Polling boats, formerly Esso tankers, the operation had been in fresh water between the seaboard and the Great Lakes, via the New York State Barge Canal and for that reason salt water ballast was not carried. Therefore the 31 year old hulls were in good condition whereas in a matter of 20 to 25 years of service on salt water there would have been little left of them.

I installed the original 360 hp air-injection propulsion engines and the Pacific Workspoor auxiliaries in some of these boats—possibly the Polling vessels and for the trade in which they were placed the power seemed adequate. This apparent power adequacy is due to the fact that boats in canal service are never speedy whereas in their present trade embracing the region between Boston and Norfolk more speed is advantageous. To this end the power was doubled by the use of a pair of Enterprise Model DMG 38 diesels, each rated 725 hp.

The fact that this installation was made in the available machinery space is perhaps of more significance than the recommissioning of the vessels. It is a dramatic presentation of the advances made in diesel technology, design and manufacture. The blast air compressor on the original diesels made the engine length equivalent to that of a seven cylinder unit while the liberal use of cast iron in engines of that period added to weight and bulk which, coupled with the rather low mep, meant that much more engine was needed in those days than is required now to deliver the same power.

Cummins Engine Installation



View of Cummins engine model NHRSGA illustrating use of Amot model 1 1/4 C thermostat on raw water side of heat exchanger installation at Rings Corner Water Pumping Station.

The photograph illustrates the use of the Amot model 1 1/4 C thermostat on the raw water side of a heat exchanger installation for water conservation. City water is introduced into the pipe at the front of the engine. It is then reduced to 30 psi pressure by the pressure reducing valve shown. From the reducing valve it goes into the heat exchanger at the bottom connection, and emerges out the top of the heat exchanger, and goes into the inlet of the Amot thermostat shown to the right of the pressure gauge.

From the Amot thermostat outlet, the water goes to waste. The model 1 1/4 C Amot thermostat shown is a standard 3-way thermostat with a 120° rating, but has the by-pass port plugged with a pipe plug. The two elements inside the housing have their outlet port drilled with a small bleed hole to provide for temperature sensing. In operation, the Amot thermostat will restrict the amount of water flow to that allowed by the bleed holes until the water temperature reaches approximately 110°F. At that time the thermostat element ports will just start to crack open and will allow a little more water to flow. If the temperature rises, the ports will open

further, and will allow more flow. The ports will be full open at 130°F., and full flow will be allowed at that temperature. During operation the raw water flow averages 8 to 10 gpm. The actual jacket water temperature regulation is accomplished by the regular engine thermostat and the Amot thermostat is used as a water saver. When the heat exchanger is actually doing some work, and requires additional raw water flow, the Amot thermostat senses an increase in raw water temperature, and will then allow more raw water flow. The Amot thermostat elements are constructed of corrosion resistant materials, and are not sensitive to pressure, and are therefore well suited for this purpose. The engine shown is a Cummins model NHRSGA 150 kw set running at 1800 rpm. The generator is a special Electric Machinery Mfg. Co. generator. The installation at the Rings Corner Water Pumping Station was engineered by Camp, Dresser and McKee of Boston.

The generator set was built by Cummins Diesel of New England. The installation was made because of the long power outages experienced by other towns during recent hurricanes.

Sturdy Tug, Karen L.

Small tugs play an important part in the maritime activities of the nation but their design and construction is not often publicized. Commonly referred to as work boats, today's small tugs often carry as much power as the old "sky condenser" steam craft which used to perform all of the towing services on the harbors of the country. They work as dredge tenders, stake boats at gravel pits, do odd jobs on charter, penetrate shallow stretches where the big ones cannot go and in general make themselves very useful. The *Karen L.* is a typical boat of this type just completed by the Gladding-Hearn Shipbuilding Corp. of Somerset, Mass. It is 44 ft long, 14 beam, 5 ft draft and the propulsion engine is a General Motor series 6-71 diesel driving a propeller 36 in. in diameter through a Snow-Nabstedt reverse and reduction gear and a monel metal shaft. The boat was designed by Preston R. Gladding, President and Naval Architect of the shipbuilding yard for the Periale Corp. of Long Island City, New York. It is of welded steel construction with a flush deck, flared bow well reinforced and tumblehome. Handrails were fitted alongside of the

pilothouse and on top of the trunk for convenience and safety of the crew. For good visibility particularly forward and abeam, the wheelhouse is placed well aft and fitted with all bronze windows. To allow for ready replacement of the engine for major overhaul, the top of the pilothouse has a removable panel and the deck is fitted with a portable plate. The *Karen L.* is subdivided below deck by a collision bulkhead and watertight bulkheads on either side of the engine-room. The fully insulated and heated cabin is fitted with benches for convenience in transporting the dredge crews. Fuel is stored in two tanks in the engine-room totaling 1000 gallons capacity. The Shipmate oil burning hot water boiler provides year round heat. To prevent sweating all metal surfaces were treated with cork impregnated insulation on top of which the pilothouse and lounge were insulated with fiber glass and sheathed with marine plywood. The engine-room is insulated and sound-proofed throughout with acoustical tile. A 32 volt electric system with engine driven generator provides light and power.

Equipment List

Batteries Exide
Compass Wilfred O. White
 & Sons

Lubricants Socony Mobile Oil
 Company
Flexible Hose Aeroquip
Reduction Gear Snow-Nabstedt
Silencer Burgess-Manning





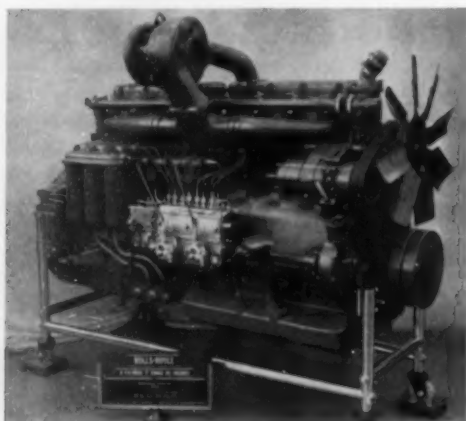
WHAT'S GOING ON IN ENGLAND

CONDUCTED BY BERNARD W. LANSDOWNE

Bernard W. Lansdowne is an associate member of the Institution of Mechanical Engineers and is widely known among British and European diesel manufacturers as editor of our English contemporary "Gas & Oil Power." His early workshop training was spread over seven years with A.E.C., Ltd., Southall, following which he served some five years with that company's sales engineering department. He entered technical journalism as assistant editor of "Gas & Oil Power" in 1950 and was appointed editor in 1952.

Turbocharged Rolls-Royce Diesels

A SURPRISE exhibit during a recent Open Week of the Diesel Division of Rolls-Royce Ltd., Derby, was a turbocharged version of their C-type diesel. The C-range have bore and stroke dimensions of $4\frac{1}{4}$ in. and 6 in. respectively and in its six-cylinder turbocharged form it is rated at 300 bhp at 2,100 rpm. The eight-cylinder turbocharged unit has a rating of 350 bhp at 1,800 rpm. In general design the engine is similar to other units in the familiar C-range but of particular interest with the turbocharged unit is the blower. This is nominally of Rotol make, Rotol being partly owned by Rolls-Royce in Great Britain, but we understand that the blower design is, in fact, an AiResearch T14 type, which presumably is to be manufactured under license in England.



A High-speed Air-cooled Diesel

A further addition to their range of small air-cooled diesel engines, is announced by Petters Ltd., of Staines. It is, I believe, the fastest running design at present available commercially, certainly on this side of the Atlantic, the speed range being up to 3,000 rpm. Power provided is 5 bhp per cylinder and the units are available with one to four cylinders. The new range has the type designation PC and important features of the design are a high power/weight ratio and easy starting. Some months ago I had the opportunity of driving a small industrial tractor fitted

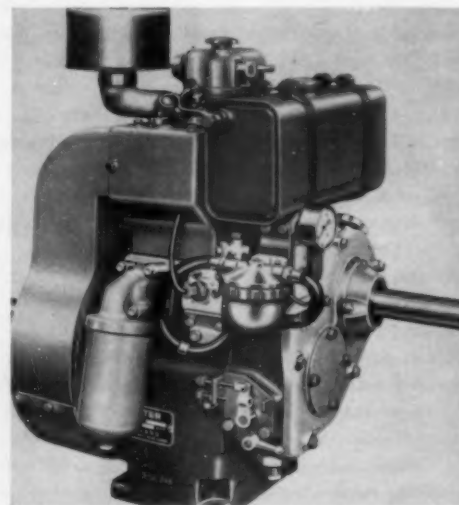
with the three-cylinder PC engine rated 15 bhp. Its performance was most impressive and this represents Petters' first entry into the automotive field. The bore and stroke dimensions are both 3 in., and the output of 5 bhp per cylinder at 3,000 rpm is equivalent to 62 lb per sq in. bmep. The piston speed is 1,500 ft per min. and fuel consumption is given as 0.52 lb per bhp per hr.

A number of detail design differences between the single and multi-cylinder units have been found necessary for various reasons, the main differences being the adoption of a tunnel bore crankcase for the single-cylinder and an underslung type for the multi-cylinder design; and the use of a flywheel-type cooling fan for the single-cylinder and a high level axial flow type for the multi-cylinder design. Cast iron is used for the crankcases which are heavily ribbed and access is provided to the moving parts in the single-cylinder engine through the side of the crankcase, and in the multi-cylinder design through the under side of the crankcase. The crankshafts are in alloy steel and have induction-hardened bearing surfaces, each crank throw being carried between two main bearings of the copper-lead lined thin-wall type. End thrust is taken by copper-lead lined thrust washers and the shafts are fully balanced.

A flywheel of high grade cast iron is, on the single-cylinder engine, located on a taper and locked in position, while for the multi-cylinder units the flywheel is bolted directly to a flange. A bell housing enclosing the flywheel is supplied as standard equipment and can be readily adapted to suit a range of SAE sizes. The H-section connecting rods are alloy steel stampings and the large end is split at 45 degrees to allow the rod to be withdrawn through the crankcase or the cylinder bore. Copper-lead is again used for the large end bearing. A fully floating gudgeon pin secures the aluminum alloy piston to the rod, there being an open cavity in the top face. Three compression rings are fitted to the piston, the top one being chromium plated, the other two being taper faced; both scraper rings are chrome faced. The cylinder itself is in high grade cast iron and of simple design to facilitate easy reboring, as required for over-size pistons. It is secured by through bolts extending through the cylinder head, past the cylinder and into the crankcase.

The porting arrangement in the cast iron cylinder head is such that the exhaust gases leave the head on the opposite side to the incoming air. An inlet valve of larger diameter than the exhaust valve is employed and it incorporates an integral mask to promote air swirl. The valve assembly is on conventional lines, each valve being fitted with double springs and operated by push rods and rockers. The camshaft is of carbon steel and is hardened on the cam profiles and bearing surfaces. It is carried at the top of the crankcase in pressure lubricated white metal lined bearings and is driven by a helical spur gear train. The injection pumps are of Bryce manufacture and have been designed so that when in position they are totally enclosed. Bryce injectors and nozzle holders are also used and a paper element type fuel filter is included in the system. A governor of the centrifugal type is carried on the engine and, together with its linkage, is totally enclosed.

Pressure lubrication is supplied from a gear type pump, the pump on the single-cylinder units being in the end journal of the camshaft whereas on the multi-cylinder design, it is situated on the rear cover. For some industrial duties, the multi-cylinder engine requires an oil cooler and this is mounted inside the fan cowling. Engine starting on the single and twin-cylinder designs is from the half speed shaft at the gear end and a half speed starting device can also be supplied at the flywheel end.



"... no one could
go wrong in buying
a Nordberg engine ..."



says Mr. Walter Scales
Manager
Conway Corporation
Conway, Arkansas

The Conway Light, Power and Water System is owned by the City of Conway, Arkansas, and operated by the Conway Corporation. Mr. Walter Scales, its manager, has this to say about Nordberg power:

"Our first Nordberg engine was installed late in 1951. That engine now has over 36,000 hours of running time on it. During the calendar years 1952 thru 1956 the engine was on the line 75% of the possible running time. During one period of 43 consecutive months the engine was operated over 90% of the possible running time and accounted for 75% of our total plant generation during that period.

"Our second Nordberg went into operation in 1956 and now has over 8,000 hours on it. There is every indication that it will be as satisfactory, and even more economical, than the first engine. Our opinion is that no one could go wrong in buying a Nordberg engine."

When you need long-term, dependable power, consult Nordberg . . . builders of a full line of engine sizes from 600 to over 12,000 hp, including Diesel, Duafuel® and Spark-Ignition Gas types. NORDBERG MFG. CO., Milwaukee, Wisconsin

Installation Data:

City of Conway, Arkansas:

Two Nordberg 2-cycle Duafuel® engines installed, total of 6225 hp.

- First engine installed late 1951 . . . rated 2750 hp, 1940 kw.
- Second engine installed late 1955 . . . rated 3475 hp, 2470 kw.

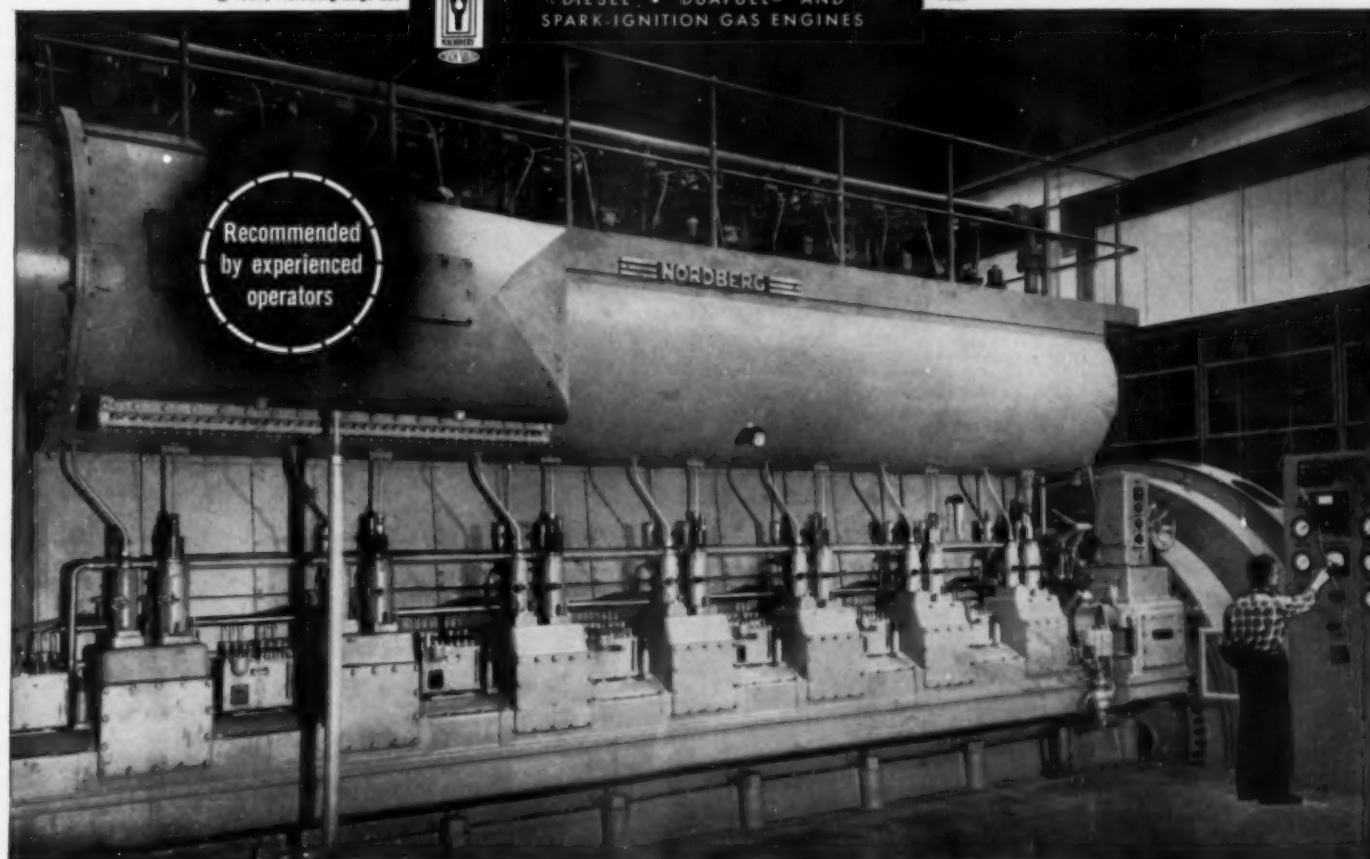
NORDBERG

© 1957, Nordberg Mfg. Co.



DIESEL • DUAFUEL® AND
SPARK-IGNITION GAS ENGINES

P657



VAPOR PHASE[®] LENGTHENS ENGINE OVERHAUL LIFE

From 8,500 Hrs. to 25,000 Hrs.

For Tidewater Oil Company

At the Hartman Lease Gas Compressor Station of the Tidewater Oil Co., Ventura, Calif., seven engine-compressor units are in operation: 1-150 bhp unit and 6-300 bhp units. The Vapor Phase installation includes a patented single Steam Separator, condensate unit, crude oil heater and steam turbine driven fan condensers.



Before Vapor Phasing, complete engine overhauls were required after 8,500 hours. Now the overhaul period has been extended to over 25,000 hours! Ring sticking is practically nil and carbon deposits are negligible.

The 5850 lbs. steam/hr. produced by the engines is now used to heat crude oil to help separate water and sludge from oil, and to heat workmen's change room. A Vapor Phase crude oil heater has replaced gas-fired oil heaters. The cooling tower used to cool engines has also been completely eliminated.

Thermal Circulation in all engines is accomplished by one large Vapor Phase unit, thus eliminating water pumps.



WRITE for full story on Vapor Phase economy
— for your installation.

"Sole Developers and Manufacturers of Vapor Phase[®]
Thermal Circulation (Ebullition) Engine Cooling Systems"



ENGINEERING CONTROLS Inc.

An Affiliate of St. Louis Shipbuilding & Steel Co.

328 Paul Brown Bldg.
St. Louis 1, Mo.

1939 N. Hillhurst Ave.
Los Angeles 27, Calif.

Assistant General Manager



H. Follett
Hodgkins, Jr.

Appointment of H. Follett Hodgkins, Jr., to the post of Assistant General Manager was announced recently by John D. Williams, Vice-President and General Manager, Rollway Bearing Company, Inc., Syracuse, New York. A graduate of Cornell University, with a degree in mechanical engineering,

Mr. Hodgkins joined Rollway Bearing six years ago, and was previously employed by White Sewing Machine Company, Cleveland. A member of Rollway's board of directors, he served in the company's time-study and methods department, later as assistant superintendent of the manufacturing department, and then as assistant to Mr. Williams. In his new capacity, he will assist in the overall supervision of Rollway's three Syracuse plants.

Towboat Buchanan Sisters



The Bronx Towing Co. of New York City has added another towing vessel to its fleet of harbor tugs. The 57 foot *Buchanan Sisters* was recently delivered to the firm by the Diesel Shipbuilding Co. of Jacksonville, Florida. Of all welded steel, the *Buchanan Sisters*, was launched in April of this year and was delivered via the Intra-Coastal waterways to New York under her own power. The tow vessel is 57 ft long with a beam of 17 ft and a depth of 8 ft. The shell is of $\frac{3}{8}$ plate, deck and bulkheads $\frac{5}{16}$ plate and the frames are of 2 x 3 x $\frac{1}{4}$ in. angle.

The main engine is a model D397 turbocharged Caterpillar diesel with a horsepower rating of 500 at 1225 rpm. The electrical system has a 3 kw Onan diesel auxiliary generator unit and an electric fresh water system by Fairbanks-Morse. The *Buchanan Sisters* has a fuel capacity of 7200 gallons and a 1000 gallon fresh water tank. The Bronx Towing Co. was founded in 1892 and operates 21 tugs, 100 deck scows for hauling sand and gravel and 7 oil barges. These vessels are used mainly in and around New York harbor. The original *Buchanan Sisters* was a wooden hull tug and was the first tow boat which the company dieselized in 1935. It was dismantled last year and the new all steel vessel ordered from Diesel Shipbuilding Corp. as its replacement.

And that reminds us that no matter how "dead" a dead front switchboard may be it's no corpse when you crawl in behind it.

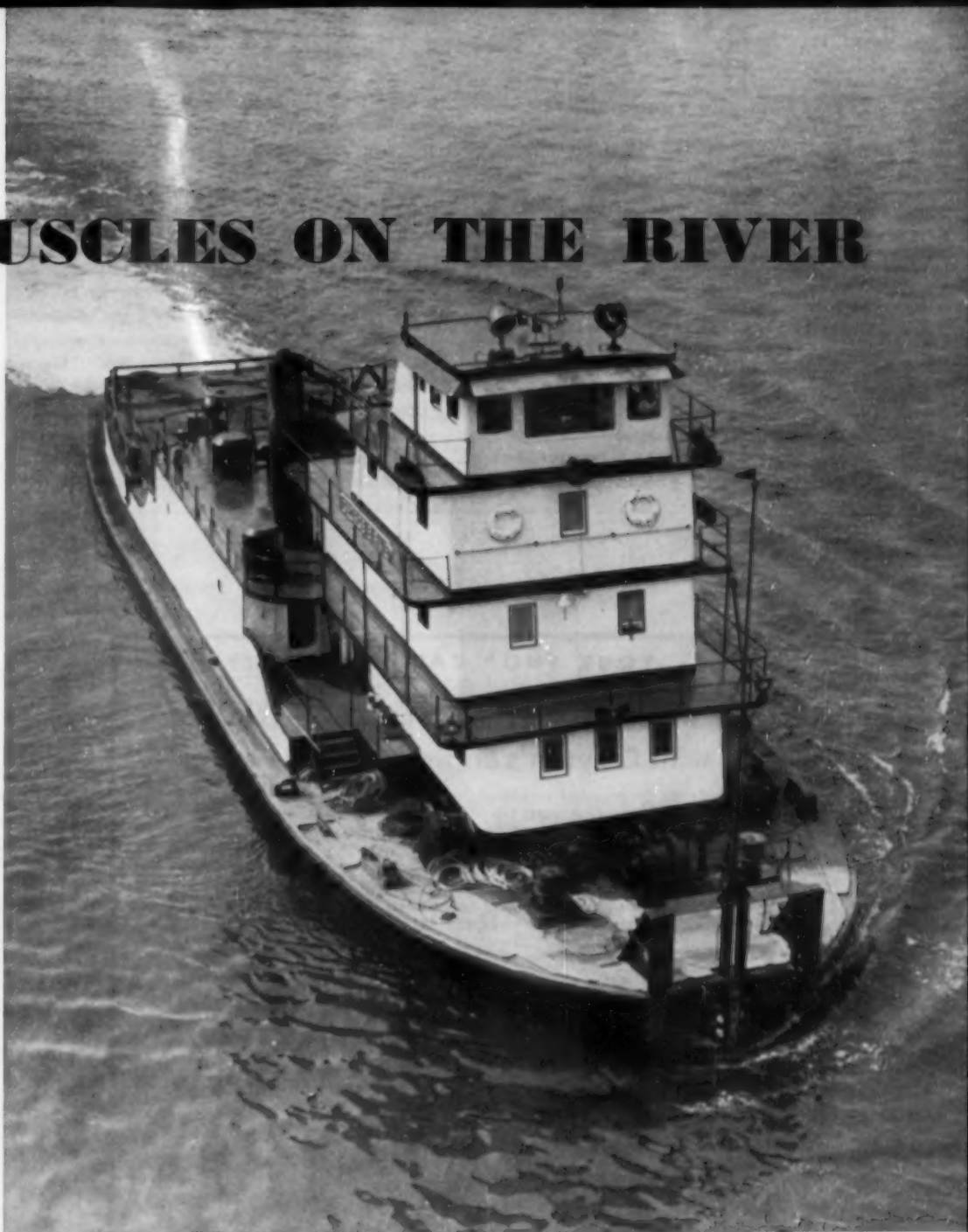
DIESEL MUSCLES ON THE RIVER

PICTURE a line of 382 fully loaded 60-ft logging trucks extending $4\frac{3}{4}$ miles. Substitute for this a single converted LSM, powered by twin 1600 hp Fairbanks-Morse, model 38D8 $\frac{1}{8}$ opposed-piston diesels, with all 382 truckload bundles of hemlock in a single tow. This is the achievement of the M/V *George Birnie* in moving a total of 1,553,660 board feet of hemlock up the Columbia River from Blind Slough, Oregon, to Camas, Washington. She made this upstream trip, a distance of approximately 100 miles, in just under 56 hours. Made up into four rafts, this 382-bundle tow is believed to be one of the largest ever taken up the Columbia River.

The *George Birnie* is the second of two sister ships owned and operated by Western Transportation Co. Both originally were 203-ft Navy LSM's and both are powered by F-M opposed-piston diesels. The *Peter W* was converted and repowered in 1948, the *George Birnie* in 1950 following identical plans. First step in adapting these LSMs to the arduous service of moving log rafts and heavily-loaded barges was to cut off 100 ft of their bows and replace with new 40-ft bows equipped with pusher knees. Next, above-deck portions were cut down and new four-deck superstructures constructed to insure ample room for equipment and crew. The first deck of both the *George Birnie* and the *Peter W* is given over to a boiler room, galley, salon and crew's quarters. On the second deck are additional crew quarters and a shower room. On the third deck, quarters for the captain and mate. The pilot house takes up the entire top, or fourth, deck and is exceptionally roomy for a vessel of this kind.

A new centralized engine room control system was added to speed and simplify the engineer's work. The pilot houses, too, were carefully engineered to give the captains complete and convenient control of the boats' operations. Equipment includes a public address system that can be heard everywhere on the boat above decks; a microphone with a long extension cord which allows the captain to stand anywhere on the top deck and give his orders; telephone connections from the pilot house to the engine room, officers' rooms and the galley; and a two-way radio-telephone. A towboat is a power unit and her success depends, basically, on the efficiency, durability and reliability of her engines. Since putting the two boats to work, the owners, in cooperation with Fairbanks-Morse engineers, have kept careful check upon operations to insure maximum efficiency under the conditions prevailing on the Columbia River.

All four of the opposed piston diesels are equipped with aluminum bearings which Fairbanks-Morse diesels have featured since 1946. These and other design advances embodied in the opposed-piston design keep maintenance costs low on these hard working engines.



Cooper-Bessemer Promotions



Grant C. Woodard



Robert F. Lay

The promotion of Robert F. Lay to the position of Vice President and Assistant General Manager is announced by Eugene L. Miller, President of The Cooper-Bessemer Corporation, Mount Ver-

non, Ohio. In his new capacity as Vice President and Assistant General Manager, Mr. Lay will be directly responsible for coordinating the operating groups of the company, Mr. Miller points out. His distinguished period of service in both Cooper-Bessemer's engineering and sales departments, as well as manufacturing experience, provides an unusual background for his new management position. Mr. Lay joined Cooper-Bessemer in 1924 while a co-op student at the University of Cincinnati, after which he became associated with the Baldwin Locomotive Company to hold the position of Assistant Sales Manager. He then joined the Elliott Company, Jeannette, Pennsylvania, as Sales Engineer, was elevated to Chief Engineer of the Supercharging Division and ultimately became Production Manager. In 1946, Mr. Lay returned

to Cooper-Bessemer to head the Stationary Application Engineering Section, and was later promoted to Chief Engineer, Products Division. In a short period of time he was appointed Assistant General Sales Manager for all Cooper-Bessemer products. In this capacity he has become widely known throughout the oil and gas industry. By the action of the Board of Directors, Mr. Lay was elected to fill the office of Vice President and General Sales Manager in the fall of 1955, the position he has held until his recent appointment to Vice President and Assistant General Manager.

The promotion of Grant C. Woodard to the position of General Sales Manager is announced by Stanley E. Johnson, Vice President and Director of Sales for The Cooper-Bessemer Corporation, Mount Vernon, Ohio. In this new capacity, Mr. Woodard will be responsible for the sales of all company products, namely centrifugal and reciprocating compressors, diesel, gas and gas-diesel engines to domestic markets, Mr. Johnson adds.

A graduate in Mechanical Engineering from Cornell University in 1948, Mr. Woodard joined the Cooper-Bessemer Sales Department the same year as a sales trainee. Later he was assigned to the local sales department where for a number of years he got actual field sales experience in covering the states of Ohio, West Virginia, Kentucky, Tennessee and Michigan. In March of 1955, Mr. Woodard was advanced to Assistant General Sales Manager, the position he has filled until his recent elevation to General Sales Manager.

George Engine Delivers Crewboats

George Engine Company, Inc., GM diesel engine distributors on the Harvey Canal just across the river from New Orleans, has recently set an all-time high for fast delivery of complete package crewboats. For Perforaciones Delta, Venezuela, they supplied three complete Gulf Master crewboats in three weeks time, complete with Maritime Administration shipping approval and all other necessary shipping papers.



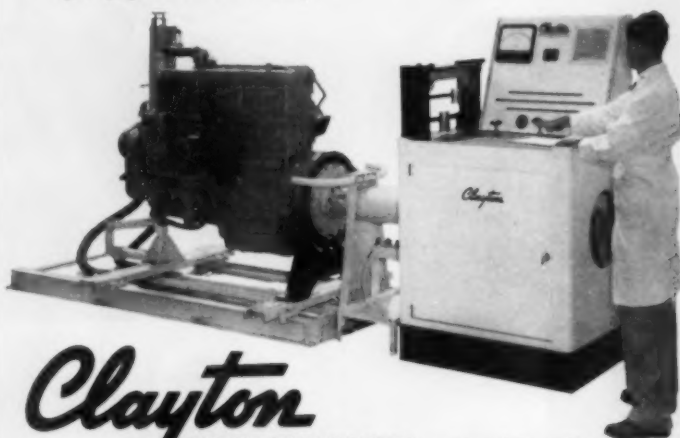
You might say that *Andele* was the order of the day when George Engine received this order from Perforaciones Delta, C. A., a subsidiary of Delta Drilling Company of Tyler, Texas. This was an emergency requirement. Crewboats were needed immediately for their Lake Maracaibo operation in Venezuela. A new drilling barge was to sail from Houston, Texas, for Maracaibo within thirty days. It was expedient that the crewboats be aboard the barge when it was towed to Venezuela.

The order was placed for three complete crewboats to be powered by GM diesel engines and

YOUR SHOP CAN POSITIVELY

GUARANTEE HORSEPOWER with Clayton's Engine Dynamometer!

Here's the practical, universal Engine Test Machine! Guaranteed h.p. means profit. Guaranteed h.p. helps your operation—indeed, *it's the profit insurance you need!* Clayton offers you many advantages. Clayton universal mounting adapters speed diesel and gasoline engine test procedures. Engines up to 1200 h.p. set up in minutes. Alignment is automatic. The Clayton Engine Test Stand, with these adapters and the Clayton cooling system—combined with a Clayton Series 17 Engine Dynamometer—gives any engine rebuilding establishment a speedy, practical test facility.



Clayton

ENGINE DYNAMOMETER... complete with
ENGINE TEST STAND equipped with
UNIVERSAL MOUNTING ADAPTERS and
UNIVERSAL ENGINE COOLING SYSTEM

Write Now! LET CLAYTON'S PLAN SHOW YOU THE WAY TO ABSOLUTE PROFITS!

For specific information on how the Clayton Engine Test package can be applied to increase the profits of your particular operation, mail this coupon or write us on your business stationery. Be sure to name the engines you service.

NAME TYPE OF ENGINE SERVICED _____

NAME _____

FIRM _____

ADDRESS _____

CITY _____

ZONE _____

STATE _____

SEND TO CLAYTON MANUFACTURING CO., BOX 550, EL MONTE, CALIFORNIA

outfitted for oilfield work. For each of the boats, George used a matched pair of 6 cylinder series 71 Detroit Diesel engine, giving them a top speed of 27 mph.

The three Gulf Master Boats, Inc. crewboats were delivered under their own power to the drilling barge at Houston and secured on the helicopter deck of Perforaciones Delta's new drilling barge bound for Venezuela, all within three weeks from the date of order, demonstrating George Engine Company's ability to deliver complete crewboat packages on short notice.

Electric Chain Hoist

A new lightweight electric chain hoist, a safe, easy-to-use, and durable unit, has been perfected and introduced for lifting operations by the Wright Hoist Division, American Chain & Cable Company, Inc., York, Pa. The newest addition to the manufacturer's line of overhead hoisting and traveling



equipment, is said to be adaptable for utilization on production lines, over machine tools, or in any shop location where space is at a premium. Rugged, durable and light-in-weight for ease of installation and ease in moving from job to job, it is available in two types of reeving: the 300-2000 lb capacity, single-chain unit and the 3000-4000 lb capacity, double-chain unit.

Operation has been arranged for one-hand control with clearly marked handles for Up or Down travel of its hook. Control ropes are attached to a control lever which activates a controller to raise or lower the hook and also act as the limit switch control. The control handle action also manually actuates the brake shoes for release or quick and positive stopping of the motor. Simplified and compact construction is made possible by the use of a double worm and gear reduction, heat-treated alloy steel chain, load wheel and hooks. With excess weight eliminated, the hoist frame and gear housing are adequately reinforced at all points of stress.

Double braking action provides built-in double safety. The spring operated motor brake automatically and instantly locks when the control cord is released. A self-locking worm gear drive provides additional positive load braking. A cam, for the

motor brake, opens the shoes and springs apply the required pressure for quick and positive stopping of the motor. Brake linings are bonded to the cast shoes for added safety and longer service life. A chain lubricator, furnished with each hoist, lubricates the chain as it passes over the load wheel. Its wick applies the specified lubricant automatically at the point where it is needed.

Motors for the electric chain hoists are available for operation on standard voltages and frequencies: 115 volts, single phase, 60 cycles; 230 volts, single phase, 60 cycles; 220/440 volts, reconnectable three phase, 60 cycles; and 550 volts, three phase, 60 cycles. The single phase a-c motors are of the capacitor start and induction run type, while the polyphase a-c motors are of the ball

bearing squirrel cage type with high starting torques. These three phase motors are of dual voltage construction and changeover for operation on either voltage is simple and quick. All motors are specially wound for hoist duty and provide extra torque for intermittent duty. A strain reliever and 15 ft of 3-wire rubber-covered conductor cable are part of the standard equipment. For the 115 and 230 volt, single phase classifications, lifting speeds vary from 15 to 3.75 ft per min. with net weights ranging from 93 to 113 lb. For the 220/440 volt, reconnectable three phase classification, lifting speeds vary from 30 to 5 ft per min. with net weights of 93 to 129 lb. For the 550 volt, three phase classification, lifting speeds vary from 20 to 10 ft per min. with net weights of 102 to 129 pounds.

GET THE FACTS..

MAXIM SILENCERS

Dimensions, installation data, applications, all packed into Maxim's informative data sheets. Find out about the new Maxim Exhaust and Intake Silencers . . . more compact, lighter, tough as ever, and at a new low cost.

BRING YOUR
FILES
UP-TO-DATE
NOW!



THE MAXIM SILENCER COMPANY

Subsidiary of Emhart Manufacturing Company
94 Homestead Ave., Hartford, Conn.

Gentlemen: Please send bulletins on silencers for: ☐ WASTE HEAT RECOVERY

☐ INTERNAL COMBUSTION AND STEAM ENGINE EXHAUST AND INTAKE ☐ AIR COMPRESSOR INTAKES AND DISCHARGES ☐ VACUUM PUMP DISCHARGES

☐ BLOWER INTAKES AND DISCHARGES ☐ STEAM, AIR OR GAS DISCHARGES ☐ JET AIRPLANE ENGINE EXHAUST AND INTAKE

NAME _____

COMPANY _____

ADDRESS _____

Lightweight Diesel Truck

Diamond T's new diesel-powered Model 922 has had pounds designed away, its weight carefully controlled, but is built around proven and accepted heavy-duty components. It was developed after extensive engineering to fill the needs of today's weight-conscious operators, and makes possible new, larger payloads—greatly increased operator revenue—reduced costs per ton mile. Probably this new lightweight Diamond T will find its most widespread application as a highway tractor pulling top payloads. Gross Combination Weight rating for single axle tractors is 65,000 lbs and 76,000 lbs for tandem axle models.

Diamond T engineers painstakingly analyzed every

construction detail of this new diesel truck to determine just where, and how much, weight could be saved, yet still have the vehicle retain its rugged strength. The sturdy manganese-alloy frame is lightened through use of aluminum cross-members, and the front bumper, hood, battery box and other parts are made entirely of aluminum. A Hopkins muffler and rod-actuated emergency brake saves additional pounds, as do special high-strength, lightweight fuel tank supports. Aluminum cases on the transmission and auxiliary transmission, aluminum hubs for many of the available axles, both front and rear, trim weight. Tubeless tires (offered at no extra cost) and either NAX lightweight disc wheels, or aluminum disc wheels contribute substantially toward making this latest Diamond T truck a true lightweight.

Chassis weights are influenced by several factors, of course, mainly by specifications and wheelbase. However, it is understood that a completely equipped chassis, with all standard equipment in-



cluding trailer connections, ranges in weight from approximately 10,000 lbs for single axle vehicles to as low as 12,210 for tandem axle models. All weights are based on use of the Cummins NHB diesel engine—and are for the complete truck, ready to roll, though less fuel and fifth wheel.

For the six-wheel version of this lightweight diesel truck, a choice of tandem rear axles is available, including the Timken SLDD, SQDD and SQW. The Eaton-Hendrickson 36M may also be specified, as may the 32M, though the latter is limited to highway service only. Page and Page lightweight suspensions may be specified at no additional cost, or the rubber-aluminum Hendrickson RSAA-320 can be supplied to reduce weight still further. When built as a dual-drive model, the tandem designation becomes a part of the model number.

Three powerful Cummins diesel engines are available for Model 922. The newly-modified old standby, the NHB-600 will probably prove to be very popular. Since its recent improvement, it now develops 210 bhp from its 743 cu in. displacement, and has a maximum torque rating of 575 lbs ft. Bore and stroke are 5 1/4 in. x 6 in. With this engine the model designation is 922N. The HRFB-600, which develops 180 bhp at 2000 rpm, has a bore and stroke of 5 1/4 in. x 6 in. and a maximum torque output of 502 lbs ft. When this engine is used the model number is 922R. The turbo-supercharged Cummins NTO-600, which is favored by many operators whose rigs run in the thinner air of mountainous areas, has the same bore and stroke as the naturally aspirated engines, but through improved breathing and supercharging, is able to develop 262 bhp at 2100 rpm, and a maximum torque of 698 lbs ft.

ITS NEW

Barges For Venezuela



Equitable has just delivered two 80 ft self-propelled derrick barges to a large contractor. The



Depots and

Service Agents

In over 100 Countries

FUEL INJECTION EQUIPMENT DIVISION

of

LUCAS ELECTRICAL SERVICES, INC.

Head Office: 653 Tenth Avenue, New York 36, New York

Sales Office: 14820 Detroit Avenue, Cleveland 7, Ohio

West Coast: 5025-29 W. Jefferson Blvd., Los Angeles 16, California

Canadian Distributors:

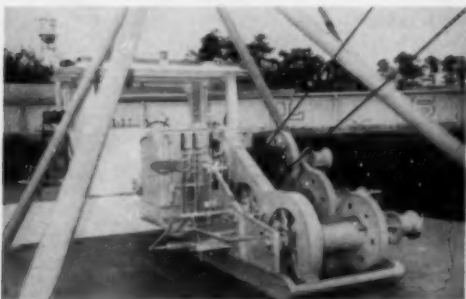
Joseph Lucas (Canada) Ltd., Head Office: 11 Davies Avenue, Toronto 8, Ontario

Branch Office: 3401 St. Antoine Street, Montreal 30, Que.

A.P. 174-817

United States firm will put these two derrick barges into service in one of its South American operations in Lake Maracaibo, Venezuela. Called Anchor barges by their new owners, the identical vessels each have an A frame on its deck. An American Hoist model 90B of the 3 drum type is used with the A frame. The hoist which has a 9,000 lb single line pull is powered by a General Motors 4 cylinder model 4031C diesel engine. The capacity of the A frame and Hoist is 30 tons at 32 foot radius.

The self-propelled barges whose dimensions are 80 ft x 24 ft x 6 ft, are of all welded steel construction. Twin Screw, each is propelled by two General Motors 4 cylinder series 71 diesel marine engines.



Because of the numerous pipe lines along the bottom of Lake Maracaibo, Venezuela, vessels are prohibited from picking up their anchors in the usual fashion. Such raising of anchors would result in dragging the anchor along the bottom thus exposing the pipe lines to damage. To remedy this, the location of anchors are marked by a buoy and when it is necessary to move a vessel or barge these self-propelled Anchor barges will be used to raise the anchor vertically from the bottom of the Lake. While the vessels were designed for this special purpose, they are flexible enough and are intended to be used in other phases of the contractor's operations.

New Sedan Cruiser

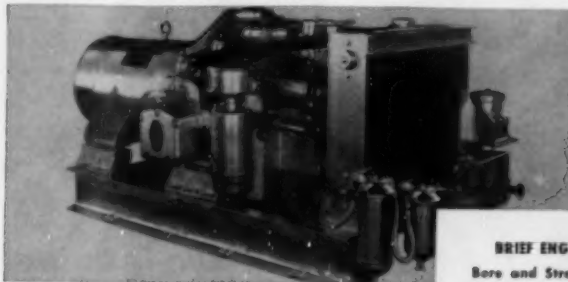


The *Judy*, a 31-foot sedan cruiser built by Sewart Seacraft, Inc., of Berwick, La., was recently put to work by a major drilling company in the Gulf of Mexico off Morgan City, La. The new craft has a top speed of 25 miles per hour and is one of the first to be powered by Detroit Diesel's new 3071C small-boat diesels.

The diesels furnished by the George Engine Company of Harvey, La., turn 20 in. x 20 in. bronze propellers through 1.5 to 1 reduction gears. The craft has an aluminum hull and seats eight passengers.

WITTE MODEL 100RDA

This powerful, compact, diesel engine-generator unit is setting outstanding performance records in maintaining either low (-10°F) or high (70°F) temperature in 50' mechanically refrigerated railway cars.



Write for complete information . . .

WITTE ENGINE WORKS



OIL WELL SUPPLY DIVISION
UNITED STATES STEEL CORPORATION
1606 Oakland Ave.—Kansas City 26, Mo.

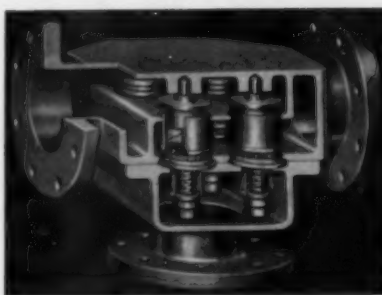
UNITED STATES STEEL

A Diesel Engine-Generator Unit 12KW (Continuous)—1800 RPM

Many other uses are being found for the Witte 100 Engine, which powers this unit. Its low profile (30") makes it desirable in either stationary or mobile applications. Its two horizontally opposed cylinders provide an unusually smooth, vibration-free unit. The 100 Engine is built for continuous 24-hour-a-day operation and is outstanding in heavy-duty industrial applications.

BRIEF ENGINE SPECIFICATIONS

Bore and Stroke	4" x 4"
Cycle	4
Displacement	100 cu. in.
Speed	1,800 rpm
Horsepower:	
Continuous	18 hp
Maximum (Bare Engine)	23.7 hp
Height	30"
Width	39"
Length (Approx.)	66"



● BE SURE WITH

AMOT

JACKET WATER & LUBE
OIL THERMOSTATS

- SAFETY** Provided for by multiple independent elements as shown above.
- ✓ Provided for by rugged AMOT element construction. No AMOT element has ever stuck closed since its introduction 6 years ago. Many years of "know how" are built into every AMOT element.
 - ✓ Omission of all hand operators means engine temperature is safe from tampering by engine attendants. AMOT is the only engine thermostat that can be considered safe without a hand operator.
 - ✓ Lack of capillary tubes, bulbs, and packing glands means no failures from kinks or leaks.
- SERVICE** There is only one replacement part—the element. Renewal of element renews all working parts. Element replacement, if ever required, is several times faster than on any competitive make. Original accuracy of temperature setting is always provided in element replacement.
- ✓ AMOT engineers are available in most major cities to help on application and other problems.
 - ✓ Most models are available from stock for rush orders.

MODELS ½" to 6" pipe sizes. Larger sizes in iron, bronze or ductile iron.

AMOT CONTROLS CORPORATION

FIRST ST. & NEVIN AVE.
RICHMOND, CALIFORNIA

MANUFACTURERS OF QUALITY ENGINE THERMOSTATS & SAFETY CONTROLS

Diesel Farm Notes

By F. Hal Higgins

WHITE Diesel's Branch Manager Gosden seen at his San Francisco office reported sale of three Superior diesels for pipe line work on the Salt Lake Pipe Line Co. system in the inter-mountain area. These are turbocharged, one being

a 40 GDSX8 model, and the other two are 40 SX8's. They are being installed for continuous duty and gross 567 hp at 800 rpm.

P. G. & E. construction crew brought one of the new English-built Ford diesel tractors with back-hoe into the Walnut Creek area in June to do a lot of its ditching work in getting power and light facilities re-aligned with the big local and state road programs now moving into high gear to modernize transportation arteries and veins to the bristling growth of population and needs. There are 150,000 now living in the Orinda-to-Concord area, according to a recent survey, with but two towns incorporated—Concord and Walnut Creek.

MECHANICALLY cooled railroad cars have boosted California strawberry crops to another all-time high in acreage and yields this year. Frozen citrus juices from Florida have also lifted that state higher and higher in orange and grapefruit farming. Burlington Refrigerator Express, Fruit Growers Express and Western Fruit Express since their inception in 1949 have hauled over a million tons of commodities in more than 40,000 carloads more than 74 million car miles, says Edison H. Thomas of L & N Railroad, which serves much of the South and is one of 70 railroads getting this service from the three firms building and operating the mechanically refrigerated reefers. A 10-ton Frigidaire cooling unit and a 20-kw General Motors diesel alternator is noted in such food handling cars over the L & N. In California the Witte engine has gone through extensive tests for such installations, and Buda, International and other lines are noted in installations over the U.S. in the development of this highly efficient food marketing system.

MASSEY-Harris-Ferguson has acquired the Davis line of industrial attachments built by Mid-Western Industries, Inc., at Wichita, Kan. The M-H-F company has been marketing much of the Davis line the past year. The increased emphasis on industrial fields brought the merger.

NEBRASKA test reports are in from the University of Nebraska on these diesels that have taken the test recently: International Harvester Company's McCormick Farmalls 450, 350 and 350 Utility. Also for the J. I. Case 301. The International diesels are rated 46.18, 36.76 and 40.99 hp at sea level for drawbar powers. The Case was 39.40 for its drawbar hp rating. Both companies also put through the same size tractors with gas engines to take care of areas still tied to gas tractor farming through size of farm or not enough hours work per year to show the owner enough savings

to pay the increased first costs, say branch managers in the West.

OLD news can be new news is proved by a 5-page letter from Col. DuVignac of the Paris Salon of farm machinery. In answer to a question by DIESEL PROGRESS' Western Field Editor as to who the French inventor was and when he invented the first crawler vehicle. The reference to a Frenchman earlier than Edgeworth in England in 1770 had been noted in a scanning of Edgeworth's Memoirs that had only recently come to hand from out of London. The French Academy of Sciences, after a scanning of its Memoirs, located the drawings and invention as Mon. d'Hermant's and the date as 1713, thus setting back the start of the modern crawler 57 years and giving the credit to the French instead of the English.

A DIESEL-powered baler is on the market in Europe by Massey-Harris and its early entry into the U.S. markets is ex-

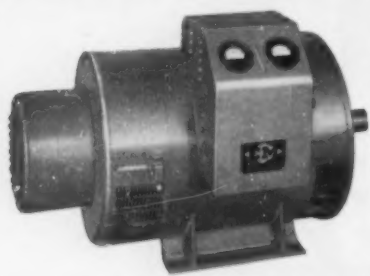
pected as soon as M-H-F has its European diesels ready for the U.S. Practically every farm implement abroad is being dieselized to cut costs. The trend to import into the U.S. foreign-built machines including autos to cut labor costs is seen in some companies where the firm has factories on both sides of the Atlantic.

J. J. SABATIER, who is export agent for some half dozen specialties including the Brisco ditcher built at Kerman, Calif., had a complete set of the Brisco ditching and ditch cleaning equipment at the irrigation equipment demonstration at the University of California farm at Davis recently. There is a great interest in Greece and many areas in eastern Europe and Africa in this equipment powered by diesel tractors, says Sabatier.

BLAKEMORE Equipment Company, Oakland, distributor for LeTourneau-Westinghouse and other lines of heavy

Power on tap!

A NEW 5 TO 50 KW "PACKAGED" GENERATOR REG-AMP



REG-AMPS are available for 1800 and 1200 rpm operation, single- or 3-phase power, at all standard low voltages. REG-AMP shown has single bearing. Two bearing units are also offered.

It's a complete source of a-c electric power and the perfect mate for your engine

REG-AMP is a revolving field a-c generator with direct-connected exciter, built-in automatic voltage regulator, and a-c ammeter and voltmeter. It's factory assembled, internally connected, and tested.

Regulates voltage automatically. Simple relay constantly senses output voltage and keeps it right for best operation of your motors, lights, and electronic equipment.

Positive voltage control. Voltage can be adjusted to compensate for line voltage drop or normal engine speed droop under heavy load.

Starts big motors fast! Coordinated regulator design gives quick response.

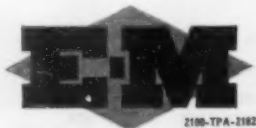
Easy to install, simple to operate. Fully self-contained. Requires no switchboard. Merely couple to engine and connect to load thru suitable switch.

Needs little maintenance. Only an occasional check for cleanliness and brush wear.

Fabricated steel frame. Rigid, drip-proof frame keeps REG-AMP safe, clean, and dry.

Performs smoothly. Every design is painstakingly engineered. REG-AMP is a product of 50 years of E-M Generator experience.

Get more information from your nearby E-M Sales Engineer. Also, write E-M for publication PRD-246... it gives complete REG-AMP ratings.



2100-TPA-2182

ELECTRIC MACHINERY MFG. COMPANY
Minneapolis 13, Minnesota

Largest manufacturer of "Packaged" Generators



SERVICE --FAST



With over one hundred Quincy Authorized Service Depots across the country, you are never far from the factory parts you may need for any Quincy Compressor. And experienced Quincy service people know the importance of 'round-the-clock air power on your job, so you can be sure they'll follow through when you specify "fastest way."

Quincy makes a compressor for every diesel, marine, oil field and industrial use from 1 to 90 CFM.
Write Dept. K-57 for descriptive catalog today.

Quincy

COMPRESSORS

FOR LOW COST AIR POWER

QUINCY COMPRESSOR CO., QUINCY, ILLINOIS

equipment, has recently acquired the services of Paul King as Vice-President and Sales Manager. King was with the factory at Peoria for many years in various capacities, including New York manager.

INTERNATIONAL Harvester Co. will have more than 1,175,000 sq ft for research when its new engineering and research center is completed near Hinsdale, just west of Chicago, on the Harvester 414-acre farm. More than 150,000 cu ft of earth is being moved ahead of construction to house the entire engineering and research staffs of 1000 men and women. Prof. Roy Bainer, head of U. of California Agricultural Engineering division, recently attended the International meetings for educators in Chicago and was greatly impressed with that firm's plans for the future.

THE Typhoon turbine will be on the market in five years from now, predicts the editor of the *British Farm Mechanization* after a check on Ford's tests of their revolutionary free piston engine.

New Division For American MARC

Formation of Electro-Dynamics Division of American MARC Inc., is announced by W. Denis Kendall, president of the firm. The new Division will be headed by Wilson H. Bucknell, until recently chief engineer of O'Keefe & Merritt Co., Los Angeles. While with O'Keefe & Merritt, Mr. Bucknell was responsible for development and production of the fifteen kw permanent magnet generator used by the U.S. Marine Corps. He also developed for the Air Force the first diesel generating plant capable of full remote control under winterized conditions, using permanent magnet generators. The new Division of American MARC will specialize in the development and production of permanent magnet generators rated at 500 watts to 10 kw, for use with American MARC diesel engines and for independent production of generators for other engine builders.

The permanent magnet-type generator of the sizes to be built by the Electro-Dynamics Division is a relatively new development in the electric generation field. Among its advantages are the elimination of brushes or slip rings within the generator, the total elimination of explosion dangers resulting from sparks and arcing of brushes, greater voltage stability, and ability to recover from short-circuits without damage to the generator.

American MARC permanent magnet generators are of the alternating current type, but will also be offered for direct

current service with an integral rectifier of a new type that converts the ac current to dc, with an operating efficiency of over 98%. The ac models will be offered in all standard frequencies between 60 and 400 cycles. American MARC Inc. is one of America's largest builders of light-weight air-cooled diesel engines and is a major supplier of such engines to the United States Marine Corps.

1958 AED Meeting

The 39th Annual Meeting of Associated Equipment Distributors, national trade association of the construction equipment industry, will be held January 26-30, 1958 at the Conrad Hilton Hotel in Chicago.

New Vice President

Franklyn M. Moffitt has been elected a Vice President of the Ashland Oil & Refining Company, Ashland Kentucky. He had been National Account Sales Manager, and in his new capacity will have charge of sales of aviation fuels, railroad and industrial fuels and lubricants, petrochemicals and other petroleum specialties. Mr. Moffitt joined Ashland Oil in January 1940 becoming successfully a terminal manager, salesman, Manager of Light Oil Sales, and was appointed National Account Sales Manager in 1952. He graduated from Duke University in 1938 where he was active in basketball and track. During 1943 to 1946 he served as a lieutenant in the Navy in the European Theater.

New Scraper

A new four-wheel prime mover and matching scraper combination, offering increased load capacity, higher speeds and greater tractive ability, has been announced by Caterpillar Tractor Co.

The newly-announced rubber-tired unit is the Caterpillar DW15 (Series E) Tractor and No. 428 Lowbowl Scraper. The tractor incorporates design changes in several major components, including the engine and power train. The new matched scraper is designed to utilize fully the tractor's output in obtaining maximum production, and incorporates Lowbowl design to facilitate fast loading.

A new Caterpillar diesel engine has been designed for the DW15 (Series E), and develops 200 (maximum output) hp at 2000 rpm. Features incorporated into the engine make use of natural engine lug characteristics, to accomplish a 23% torque rise and high rim-pull over a wide speed range, decreasing the need for gear changes. As an example, in fourth gear over 3000 lbs of rim-pull

are delivered when the tractor is operating in the speed range between 9 and 18 mph. In addition to reducing gear shifting, the new engine affords faster acceleration and resultant lower cycle time. Besides offering wide-range torque characteristics, the new DW15 (Series E) incorporates a ten-speed transmission, which offers working speeds from 2.7 to 37.2 mph. Top speed of the DW15 (Series E) is 14 mph faster than its predecessor model, the DW15 (Series C). The major components of the drive train, such as the final drive housings, axle tubes, axle shafts and final drive gears have been given additional strength for longer service life.

The new No. 428 Scraper incorporates Lowbowl design, similar to that introduced by Caterpillar on its larger model scrapers. The No. 428 has a struck capacity of 13 cu yds—an increase of 4.1 cu yds over its predecessor, the No. 15 Scraper. Heaped capacity of the new scraper is 18 cu yds—4 cu yds more than

the previous model in the Company line. Additional design features of the No. 428 Scraper include increased ground clearance, intended to permit higher speeds in uncertain footing, and an apron lift of increased height to facilitate the faster ejection of material.

The pushblock has also been modified. Its wider and higher dimensions, coupled with a new rounded contour, provide a better target for the pushing tractor.

ITS NEW

NOW AVAILABLE! The Brand New **DIESEL ENGINE CATALOG**, Volume 22. This giant, 400 page, 10½" x 13½", fully illustrated reference book containing complete and detailed engine and accessory sections is the biggest and best yet. Mail orders are now being filled for this "Bible of the Industry," which has been revised, rewritten and brought up to date completely from cover to cover. Send your order in now for this limited edition, which costs \$10 postpaid plus California sales tax where applicable. Send checks or company order forms to **DIESEL PROGRESS**, 816 N. La Cienega Blvd., Los Angeles 46, California.

Murray & Tregurtha

HARBORMASTERS

solve tough marine power and steering problems!



Steer in any direction with full power

Easy service and low operating costs

Protection in shallow water

Rugged, trouble-free performance

Models from 40 to 400 h.p. (Series O-4 illustrated, 40-50 h.p., Gas or Diesel).

You can solve your tough power and steering problems with Harbormaster Outboard Propulsion and Steering Units . . . the complete heavy duty marine power packages. They are quickly and easily installed for immediate use. They are efficient, economical to operate and maintain . . . and they have many special features not found with ordinary marine power, so they are the answer to many tough marine problems.

If you need easily installed power, better steering control, safety in shallow water, easier maintenance, more efficient performance, simpler hull design, more cargo space, bigger payloads, or simplified crew operation . . . you should investigate the benefits of Harbormaster Outboard Propulsion and Steering.

Send for your copy of the new Harbormaster Catalog today. You'll find detailed information and also many interesting Harbormaster installation photos.

MURRAY & TREGURTHA, INC.
6 Hancock St., Quincy 71, Mass.

Please send me New Catalog giving details and showing many photos of Harbormasters in action.

Name.....

Company.....

Address.....

THE PROBLEM:

**"Heavy duty filtration
to your specification"**

THE ANSWER:

**"ENGINE LIFE *Maxiflo*
'4000' SERIES OF FULLY ENCASED,
MULTIPLE FILTER SYSTEMS!"**

**Replaceable Element Filtration For Marine,
Diesel and Natural Gas Engines In:**

HEAVY INDUSTRY (Pipelines & Power Plants)

CONSTRUCTION (Heavy Earth-Moving Equipment)

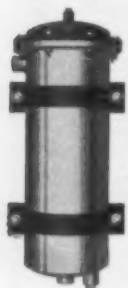
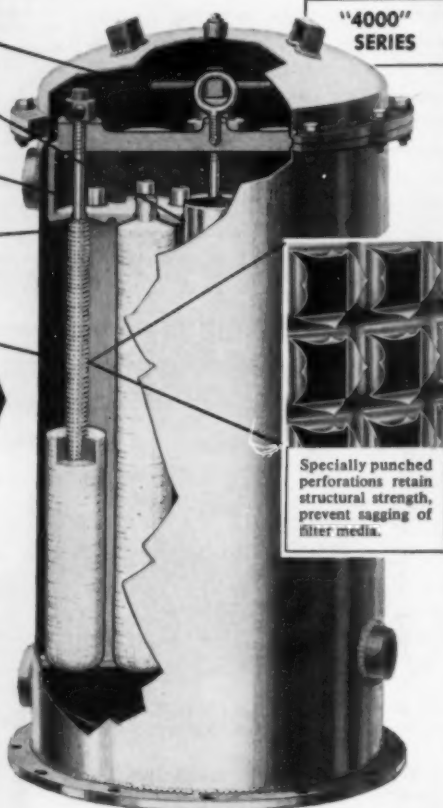
MARINE ENGINES • STATIONARY ENGINES

- Elements uniformly compressed with wing-nut bolts. This reduces service cost factor.
- Neoprene "O" Ring Seal insures perfect seal, eliminates gasket replacement.
- Cast aluminum manifold for ideal element compression.
- Piston type bypass valves do not orifice when open, valves face downward so abrasives will not adhere to piston and be flushed back into engine.
- Heavy welded steel construction.

Maxiflo non-corrosive metal cores handle up to ten times normal running volume, give solid vertical support.

**MODERN FUEL CONDITIONING
THROUGH *Maxiflo* "4000"
FULL FLOW SYSTEMS**

- Condition viscous lube oil and fuel.
- Remove, neutralize acid without using chemicals.
- Trap abrasives: carbon, dust, metal particles.
- Meet today's supercharged engine requirements.
- Give maximum oil flow, minimum pressure loss.
- Repel moisture on element surface.



***Maxiflo* "3000" SERIES Ratio-rated for:
OIL DRILLING RIG ENGINES • PUMPING ENGINES • TRUCKS • MARINE
ENGINES (light) • CONSTRUCTION (Euclid trucks, shovels, etc.)**

For moderately heavy duty installations, the *Maxiflo* "3000" Series offer the same consistent performance as the "4000" Series.

FOR BOTH *Maxiflo* "4000" AND "3000" COMPLETE DIMENSION DRAWINGS AND SPECIFICATIONS FURNISHED ON REQUEST

A Comprehensive Line of Filters and Replacement Elements

ENGINE LIFE PRODUCTS CORPORATION

EL MONTE, CALIFORNIA

ENGINEERED FILTRATION SERVICE



INDUSTRIAL AUTOMOTIVE MARINE & AGRICULTURAL

Mid-West Diesel News

By L. H. Houck

VOGEL Construction Co., Indianapolis, has purchased a GM Detroit diesel for repowering a Model 255 P & H crane, 3/4-yd capacity. New diesel is a Model 3055C, 71 series, rated at 72 hp continuous. Sale was made by Reid-Holcomb Co., Inc., Indianapolis.

SAWMILL of C. W. Jones, Poplar Bluff, Mo., has been repowered with an HRIP-600, 165 hp Cummins diesel, supplied by Cummins Missouri Diesel Sales Corp., St. Louis.

MAHRENHOLTZ Farms, Vincennes, Ind., has added a TR 6 Wagner tractor to its farm fleet from Pardiek Sales & Service, Seymour, Ind. Wagner is powered with Cummins diesel and made in Portland, Oregon.

RYAN Equipment Co., Sikeston, has delivered an Allis-Chalmers HD11 to Ben Buford, at Benton, Mo., for general contracting work.

ELTON Hensley, Fulton, Mo., contractor, bought an Allis-Chalmers HD-16 with torque converter and an HD 6 from Cooke Sales & Service.

DIESEL Equipment Co., Wichita and Great Bend, Kansas, has delivered a Model 62506 GM diesel to Ben Hasz Well Works of Scott City, Kan., for installation on an irrigation turbine pump.

EARL Flakne, Carrolton, Mo., has taken delivery on a Caterpillar D8 from Midland Tractor Co., Chillicothe, Mo.

GENERAL Diesel & Equipment Co., Williston, No. Dakota, has delivered a 218 hp 71 series GM diesel to Mendenhall Marine Service, Inc., Tioga, No. Dakota.

CARDINAL Drilling Co., Bismarck, No. Dakota, has purchased a 20 kw Detroit GM diesel generator set from General Diesel & Equipment Co., Williston, No. Dakota.

ARKANSAS Tractor Co., West Memphis, recently held a Case Tractorama on U.S. 70 near West Memphis. Case Terratrak 800 with diesel engine, Terramatic drive and hydraulic dozer blade, was the star performer for a group of contractors and road officials.

ALBERT Gordon, Forrest City, Mo., has bought a Caterpillar D7 from Midland at Chillicothe, and will use it in general construction work.

AN Allis-Chalmers HD-6G with AC die-

sel, has been delivered to Paul Krummel, St. Louis by Ryan Equipment Co. It is to be used for loading trucks, general cleanup and backfilling.

SEEN in Kentucky: Silver Fleet COE White diesel tractor which is standard equipment with this over-the-road common carrier company.

REID-Holcomb Co., Inc., Indianapolis, has delivered a Model 12105 pair of 300 hp GM diesels of the 71 series to Lenahan & Koenen, Vincennes, for powering an 8-inch gravel pump. The twin dieselized unit is heat exchanger cooled and was furnished with 1.77:1 reduction gear ratio.

EARTH Construction & Engineering, Inc., Fort Wayne, Ind., has taken delivery on two 7 cu yd Euclid scrapers from Reid-Holcomb, Inc. The units are powered with 143 hp GM Series 71 diesels.

JOHN R. Burlon, Montgomery City, Mo., contractor and road builder, has added an Allis-Chalmers HD-16 with torque converter to his road building equipment. Cooke Sales & Service, Fulton, handled sale.

BUCHANAN County, St. Joseph, Mo., purchased a D7 Caterpillar tractor from Midland Tractor Co., Chillicothe, Mo., for use in county road work.

MEIER Bros., contractors, Jackson, Mo., have recently added an Allis-Chalmers HD-6B and an HD-11B with AC diesel power to its construction fleet. Sale made by Ryan, Sikeston, Mo.

STERLING Drilling Co., Sterling, Kan., has repowered a U-10 tractor with two GM Model 62408 diesels and Allison Torque converter, from Diesel Equipment Co., Inc., Wichita and Great Bend, Kansas.

Trucks For Dominican Republic

Purchase of 10 Kenworth Model 801 rock and ore movers and two Kenworth Model 924 conventional highway transports by Compania Constructora Elmhurst of Ciudad Trujillo, Dominican Republic, is announced by Lewis T. Gerlach, general sales manager for Kenworth Motor Truck Company of Seattle. The spring-mounted end-dump rock and ore movers have a capacity of 12 cu yds struck or a heaped load capacity of 14 cu yds with a payload weight capacity of 36,000 lbs. Custom-engineered, the trucks include Kenworth-designed rock and ore mover features. The offset one-man enclosed cab provides all-angle visibility, fore and aft, as well as of the ground area immediately surrounding the truck. Oversize brakes are air-op-

erated. Kenworth's patented single-acting, straddle-mounted telescopic hoist absorbs twist and side-thrust through the body guide and equalizer.

Powered by Cummins industrial diesel engines, the heavy-duty rock and ore moving units have the Kenworth full-floating planetary-type drive axle with double reduction drive unit. The model 924's have the same engine specifications for standardization of maintenance. Of steel construction, the custom-engineered units with drop-frame front-end design have a gross vehicle weight rating of 70,000 lbs. Both units are equipped with winches of 45,000 lbs line-pull capacity. Compania Constructora Elmhurst will use the 12 Kenworths in road construction. The Model 924's will be used with lowboy trailers to move construction equipment. The first Kenworths to be shipped to the Dominican Republic, the Elmhurst order is moving by ship from New Orleans.

Award For Railroaders

"For developing the Diesel-electric locomotive which helped revolutionize American railroading", three of the early engineering and managerial personnel of the Electro-Motive Division of General Motors and four sections of the engineering department of the corporation will receive the 1957 Elmer A. Sperry Award, it was announced recently. Robert B. Lea, chairman of the Sperry Board of Award, pointed out that, for the first time, a major engineering award will go not to one person but to a number of individuals and groups for their parts in a complex project. The award was established in 1955 in honor of Elmer A. Sperry, many of whose achievements contributed to the field of transportation. These include not only the famous gyro compass and other sea and air navigation aids, but improved automobiles, trolley cars, and a rail flaw detector which adds to the safety of American railroads. The award is given each year for "a distinguished engineering contribution which, through application proved in actual service, has advanced the art of transportation, whether by land, sea or air."

The three leaders who are to share in the award are: Harold L. Hamilton, Los Altos, California, retired vice president of General Motors and founder of Electro-Motive, who was its leader through the entire period of the development until the General Motors Diesel-electric locomotive was accepted in all branches of United States railroad service in 1940. Richard M. Dilworth of Hinsdale, Illinois, retired, who was chief engineer of Electro-Motive from 1926 to 1951 and, as such, headed the research

and design work which found fruition in the first successful application of the Diesel-electric as a prime mover for the propulsion of trains of all classes. Eugene W. Kettering of Hinsdale, Illinois, now director of research, Electro-Motive Division at LaGrange, Illinois, who, from 1936 to 1942 was in direct charge of the development of the General Motors 567 series Diesel engine. This unit was the major element in broadening the capability of the Diesel-electric locomotive to cover all phases of domestic railroad motive-power needs.

The four sections of the Engineering department of Electro-Motive cited as having made major contributions to the achievement are: Controls Section, Electrical Engineering Section, Locomotive Section, Mechanical Engineering Section. "It should be explained", said Mr. Lea, "that in making this award the board took into account the fact that the period of development extended from the establishment of the definite concept of the diesel-electric locomotive in the early thirties through 1940 when the work on the locomotive had progressed to the point where it was released for quantity production and numerous orders had been received from operating railroads. That marked, in our opinion, the point at which it might accurately be said that the diesel-electric locomotive had arrived. The three men designated to receive the award for 1957 were major figures in the development to that point."

Pipelayer Tractor

The availability of a new medium-sized pipelayer, designed to combine lifting power with sure stability, has been announced by Caterpillar Tractor Co. Designated the Caterpillar No. 572 Pipelayer, the new machine offers the pipelaying contractor 86,000 lbs of lifting capacity at 4 ft overhang, and a wide 86-in. track gauge, for dependable footing. Ground clearance of 19 in. assures maximum maneuverability in all types of terrain. To withstand the extreme stresses of heavy pipelayer work, the machine's design includes the integrated unit construction of the tractor chassis and pipelayer mechanism. Further weight carrying ability is provided by the extra heavy duty track rollers—six on each side—having large diameter bearings and shafts. A large sprocket, designed especially for pipelayer work, has also been incorporated. Hydraulic track adjusters permit quick adjustment of track tension with a standard grease gun.

Power for the No. 572 Pipelayer is developed by a 4-cylinder Caterpillar diesel engine, rated at 128 hp at 1200 rpm. The engine transmits power to a three-

stage torque converter, which is coupled with a special low-speed transmission having 3 forward and 2 reverse speeds. This low-speed, pressure-lubricated transmission is engineered to provide the slow speeds necessary for pipelaying work. Access to the torque converter transmission can be gained by the removal of the box construction center section of the pipelayer frame. In-seat

starting is provided on the No. 572 Pipelayer, utilizing an independent two-cylinder, four stroke cycle gasoline engine, with 6-volt electric starter. **ITS NEW**

Feller who made a rigid exhaust pipe connection and ripped the exhaust manifold off his engine turned out to be a worshiper at the shrine of flexible connections.



World's largest Radiant Tube Pit-type Carburizer installed at

...more precise heat treatment for larger gears

• New heat-treating equipment, including the largest radiant tube pit-type gas carburizing furnace ever built, has recently been installed in the Pittsburgh plant of our subsidiary, Pittsburgh Gear Company. These new additions to BRAD FOOTE's extensive heat-treating equipment provide facilities for the most advanced techniques in deep case carburizing and hardening in controlled atmospheres.

• The new carburizer can handle gears or machine parts up to 6 feet long, 6 feet wide and up to 8500 pounds in weight. In addition to its size, the new equipment has an unusual ability to control carbon penetration, giving extremely precise control of the depth of surface hardening.

• Special heat-treating equipment, like this new carburizer, allows BRAD FOOTE to impart the precise metallurgical characteristics which make for longer wear, shock resistance and freedom from distortion in gears of all sizes and types. And BRAD FOOTE heat-treating is under the supervision of metallurgists with long experience in the special problems of the gear industry.

• Whether you want one gear or ten thousand, BRAD FOOTE's extensive facilities and specialized skills are at your disposal. Send us the specification on your next problem job for quotation. No obligation, of course.

BRAD FOOTE



BRAD FOOTE MAKES

Spur • Bevel
Helical • Spiral Bevel
Herringbone
Zonal • Worms
Worm Gears • Reducers
Transmissions



subsidiaries

BRAD FOOTE GEAR WORKS, INC.

1306 South Cicero Avenue • Cicero 50, Illinois
Bishop 2-1070 • Olympic 2-7700 • TWX: CIC-2856-U

AMERICAN GEAR & MFG. CO. PITTSBURGH GEAR COMPANY
Phone: Lemont 920 Phone: Spalding 1-4600
Lemont, Illinois Pittsburgh 25, Pennsylvania

Gulf Coast Diesel

Notes

By Michael T. Pate

BROWN & Root, Inc., Houston, has taken delivery of two lots of 300 amp Lincoln Electric arc-welding generators, one of 16 units, the other 9, all 25 being

driven by series 71, model 2055, 2-cylinder General Motors diesels. All units were supplied by Big 3 Welding Equipment Company, Houston.

FOSTER Cathead Company, Wichita Falls, Texas, has obtained from Waukesha Sales & Service, Inc., Houston, two model 180DLCU Waukesha diesels, rated 33 hp at 2000 rpm. They will be

assembled with the Cathead company's units for oilfield service.

BREWSTER Bartle Drilling Company, Houston, for delivery to its operations at Harvey, Louisiana, where a marine drilling rig is being assembled, has bought from Waukesha Sales & Service, Inc., of Houston, two model 6NKDBSU Waukesha diesels each rated 342 hp at

1100 rpm and one model 135DKU Waukesha diesel rated 106 hp at 1800 rpm. The same rig will also have a model 195DLCU Waukesha diesel rated 76 hp at 2000 rpm. This engine was bought by Oilwell Supply Company, Houston, through Waukesha Sales & Service, Inc., and will be directly connected to an Oilwell unit.

RAY & Taylor, Houston, have bought from Big 3 Welding Equipment Company, Houston, three 250 amp Lincoln Electric welding generators, each powered by a model DIX4D Hercules 4-cylinder diesel.

S.A.G. & T. Company, Houston, has bought from Big 3 Welding Equipment Company, Houston, three 300 amp Lincoln welding generators, each powered by a series 71, model 2055, 2-cylinder General Motors diesel.

TAYLOR Equipment Company, Houston, has bought through Waukesha Sales & Service, Inc., Houston, a model 180 DLCU Waukesha diesel rated 33 hp at 2000 rpm, which will be used to re-power one of the company's units.

NELEN, Ltd., Fort Williams, Ontario, Canada, has secured from Big 3 Welding Equipment Company, Houston, twenty-eight 250 amp Lincoln Electric welding generators, each powered by a 4-cylinder model DIX4D Hercules diesel.

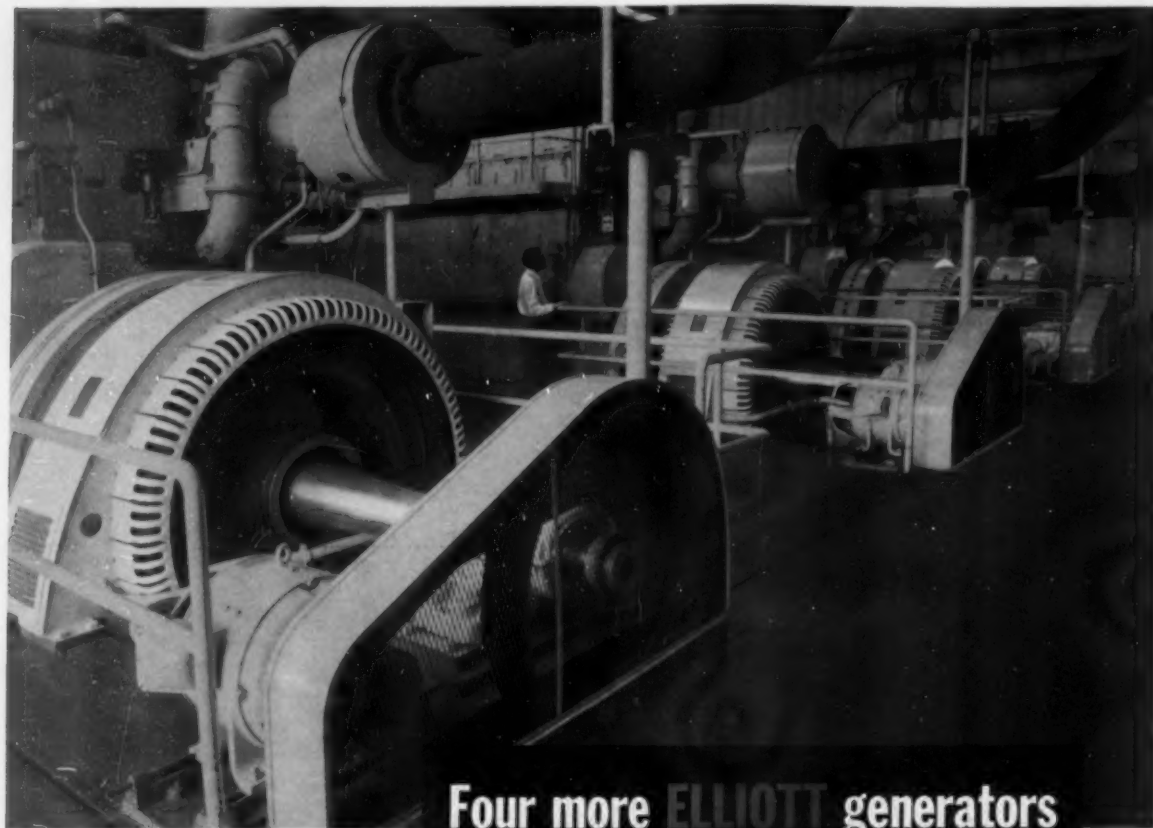
SOUTH Coast Corporation, New Iberia, Louisiana, has purchased a model 190 DLCU Waukesha diesel, rated 66 hp at 2000 rpm, from Waukesha Sales & Service, Inc., Houston.

HUMBLE OIL & Refining Company, Houston, has taken delivery of two 300 amp Lincoln Electric welding generators, each powered by a series 71, model 2055 General Motors diesel. The units were furnished by Big 3 Welding Equipment Company, Houston.

NATIONAL Potash Company, Hobbs, New Mexico, continues to re-power the Jeeps in its underground workings with model 180DLCU Waukesha diesels, rated 33 hp at 2000 rpm. An additional unit has just been delivered by Waukesha Sales & Service, Inc., Houston.

Filtration Manual

Purolator Products, Inc. of Rahway, N. J. has recently issued a 32 page filtration manual for product designers. This manual is fully illustrated and contains much information of value on Filters to product designers. For further information on obtaining this manual, write to Purolator Products, Inc., Rahway, New Jersey.



These four Elliott 1583-kva, 327-rpm generators are driven by dual-fuel diesel engines. The diesels are also equipped with Elliott turbochargers.

Four more **ELLIOTT** generators help provide dependable power for **RURAL AMERICA!**



Over and over again, users of Elliott generators discover that Elliott-engineered machines "pay off" in trouble-free, continuous, performance—and in worthwhile economies, initially and annually. These four Elliott generators—serving the Federated Rural Electric Association at Jackson, Minnesota since 1949—are good examples of this economy and long-term dependability.

The outstanding performance record of Elliott generators—over the years—is the result of superior design and good workmanship. Electrically-welded fabricated steel parts, sturdy coil construction and extra bracing of windings provide high mechanical strength. Extra taping and insulating of stator coils assure positive moisture protection.

In fact, sound engineering and careful construction *throughout* insures the desirable continuity of electric generation, without costly breakdowns. And the Elliott design permits easy accessibility for routine cleaning and maintenance.

Ask for
Bulletin PB 1400-3



ELLIOTT Company

Ridgway Plant, Ridgway, Pa.



Naval Architect Appointed

V. M. Friede, President of Friede & Goldman, Inc., Naval Architects and Marine Engineers of New Orleans, Louisiana, announces that Stanley M. Bebler has joined the firm as a Senior Naval Architect. Mr. Bebler received his B.S. degree in Naval Architecture and Marine Engineering from MIT in 1934.

Since then his work has been continuously in shipbuilding and naval architecture, having worked with Bethlehem Shipbuilding Division, Quincy, Massachusetts; Ingalls Shipbuilding Corporation, Pascagoula, Mississippi; United Engineering Division of Matson Navigation Company, San Francisco, California; Todd Shipyards Corporation, Pacific Division; and Palmer & Baker, Inc., Mobile, Alabama. He came to Friede & Goldman, Inc. from Calmes Engineering and Shipyard Company where he had been employed since 1954 as Chief Engineer. Mr. Bebler holds professional engineers' license from the State of California, and is a member of the Society of Naval Architects and Marine Engineers.

Manager Of Engineering

Donald M. McDowell has been named manager of engineering for the Le Roi Division, Westinghouse Air Brake Co., Milwaukee, Wis. McDowell's promotion from that of acting manager of engineering was announced by P. I. Birchard, Westinghouse vice president and general manager of the Le Roi Division.

McDowell joined Le Roi as chief development engineer in June of 1956. Since then he has been active in the development of new products for the construction and mining markets. For the past several months he has been acting manager of the division's engineering department.

Marks 50th Anniversary

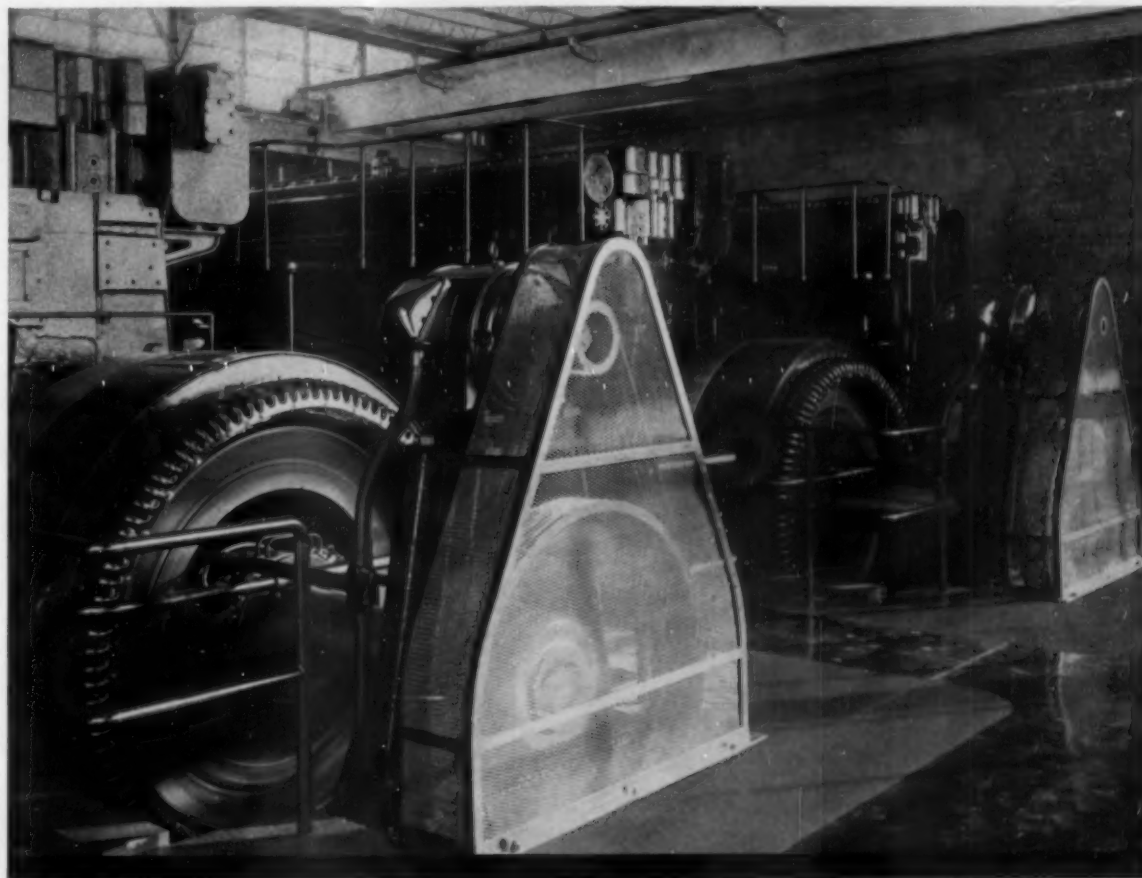
The Park Drop Forge Co., a Cleveland concern well-known throughout the industrial world for its production of heavy closed-die forgings, celebrated its 50th anniversary on May 27. Organized in Cleveland, May, 1907, the company has enlarged and expanded until, today, its factory buildings cover over 10 acres—extending from East 77 Street to East 82 Street along the southern border of Cleveland's Gordon Park. One of the company's original founders, Mr. Windsor T. White, was elected the company's first Chairman of the Board; and he is still serving actively in that capacity today. Mr. George C. Gordon, who joined the company in 1910 as Vice-President and General Manager, later became President and was made Vice-

Chairman of the Board in 1953. He, too, is still active in the management of the company. Other officers just re-elected at the company's 50th annual meeting are Fred L. Ball, President; Wm. A. Humel, Vice-President and General Manager; and A. F. Hodges, Secretary and Treasurer.

Originally engaged in the production of

automotive crankshafts for such famous old cars as the Marmon, Peerless, Winton, Jordan, etc., Park has greatly expanded its product variety since 1907. Component parts for aircraft, marine engines, diesel locomotives, generator sets, air compressors, pumps, machine tools, and tractors make up the bulk of Park's present production. Park makes heavy-duty crankshafts up to 5000 lbs.

NOW AVAILABLE! The Brand New **DIESEL ENGINE CATALOG**, Volume 22. This giant, 400 page, 10½" x 13½", fully illustrated reference book containing complete and detailed engine and accessory sections is the biggest and best yet. Mail orders are now being filled for this "Bible of the Industry," which has been revised, rewritten and brought up to date completely from cover to cover. Send your order in now for this limited edition, which costs \$10 postpaid plus California sales tax where applicable. Send checks or company orders to **DIESEL PROGRESS**, 816 N. La Cienega Blvd., Los Angeles 46, Calif.



Wins Award

CREDITS SINCLAIR WITH BIG ASSIST

Dino, the Sinclair Dinosaur, says:

"Send now for
free pamphlet on
RUBILENE!"



Thumb Electric Cooperative, Michigan, has won the Diesel Progress Award for 1956 for the best operated internal combustion REA plant in America for 5,000 KW or less.

Their management says: "We attribute our operating success in a large measure to Sinclair's RUBILENE® HD 40 Diesel Lubricating Oil used in our three 1850 HP Cooper Bessemer Diesel engines. We have found this oil to be superior under our rugged load carrying conditions. It has given us an excellent rate of consumption while reducing wear. Of great help, too, are the regular visits of the Sinclair Lubrication Engineers."

Let Sinclair give you a big assist, too, in the success of your operation. Call your nearest Sinclair Representative, or write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. There's no obligation.

SINCLAIR DIESEL LUBRICANTS

Michigan-Ohio News

By Jim Brown

LEELANAU County Road Commission at Leland, Michigan is returning two of their Oshkosh trucks to the Oshkosh Motor Truck Company in Oshkosh, Wis. to be completely refurbished and converted from gasoline to Cummins diesel.

One will have a model HRFB600 rated at 190 hp, the other an HRB600.

TO POWER a Butler cement batch plant for Ministrelli Construction Co. of Detroit, Peninsular Diesel of Detroit has installed a 55 kw generator set run by a model 3150 GM Detroit Diesel.

STANLEY Leach and Bros. of Kalama-

zoo, Michigan has purchased an Allis Chalmers model C Motor Grader, complete with cab, scarifier and shifting mold board. The new motor grader was delivered by Earle Equipment Company of Detroit.

A MODEL L50K Lorain 1-yd dragline was delivered to Arger-Singer-Morse Co. of Ann Arbor, Michigan by R. G. Moel-

ler Co. of Detroit. The dragline is powered by a 4-71 GM Detroit Diesel and will be broken in on a construction project near Jackson, Michigan.

WOLVERINE Tractor and Equipment Company of Detroit has delivered a model TD-6 International crawler tractor equipped with hydraulic bulldozer to James A. Campbell of Warren, Michigan.

A CATERPILLAR 350 kw electric generator set powered by a model D397 diesel has been delivered to the Sargent Construction Co. of Saginaw, Michigan. The sale was made by Michigan Tractor and Machinery Company of Detroit.

PENINSULAR Diesel of Detroit has delivered a model 4031C GM Detroit Diesel to Farm Bureau Services in Kalamazoo, Mich. The new diesel engine will be used to power a portable Daffin feed mill.

EARLE Equipment Company of Detroit has sold a model HD16 Allis Chalmers crawler tractor equipped with a model 16BD hydraulic bulldozer, to Jack Walser of Pontiac, Michigan.

AMONG recent sales at the R. G. Moeller Company of Detroit are 3 Ingersoll-Rand model DR900 Gyro-flo air compressors. The air compressors will be used by Dunbar and Sullivan Co. of Detroit on the Detroit River. They are powered by GM model 6-110 Detroit Diesel engines.

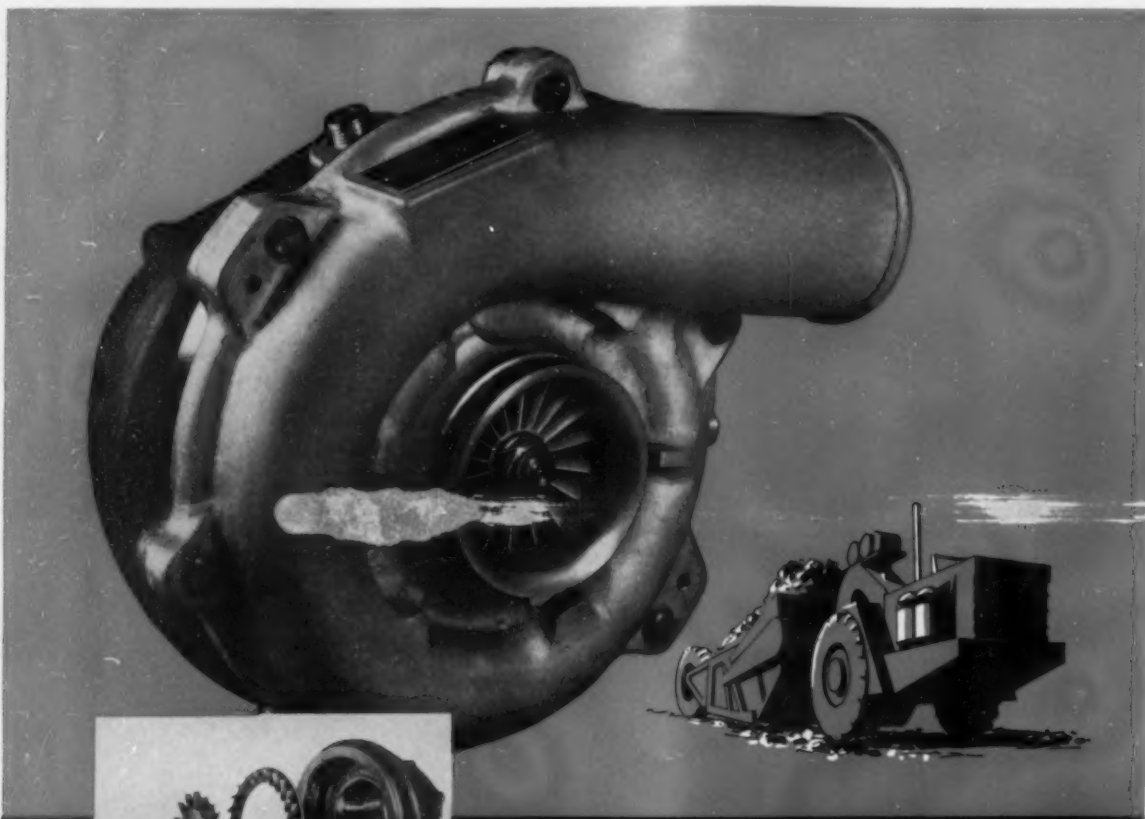
A MODEL JT6B Cummins diesel rated at 175 hp has recently been installed by Cummins Diesel Michigan, Inc. in a GMC model 740 truck-trailer for Hugh McCollough of Detroit.

PEERLESS Cement Corp. of Detroit has accepted delivery of a model HOD Hough Payloader. The 2½ yd Payloader was sold by Wolverine Tractor and Equipment Company of Detroit and Grand Rapids.

A ¾ yd model LS 68 Link-Belt Trench Hoe powered by a GM model 3030C Detroit Diesel engine has been purchased by Broshear Contractors of Hamilton, Ohio. The sale was made by Flack Equipment Co. of Dayton, Ohio.

A turbocharged model D337F Caterpillar diesel has recently been sold to Ivan Schworn of Traverse City, Michigan by Michigan Tractor and Machinery Co. of Detroit. The new Cat diesel will be used to power a Commander gravel plant in Traverse City.

THE O. J. Briggs Lumber Company in White Cloud, Michigan has a new engine for its saw mill. It is a model 3031C



NEW! Rugged Turbine Design Means Less Maintenance with Thompson Turbochargers

Turbine parts on new Thompson Turbochargers are crack- and corrosion-free, thanks to use of a heat-resistant alloy and close attention to design! Built to withstand turbine inlet temperatures of over 1500 degrees, the Thompson turbine is designed to deliver a minimum of 10,000 hours of trouble-free service. Studs have been eliminated from this high temperature section for easier installation and longer life.

You'll find other advanced features in the bearing and compressor sections of new Thompson Turbochargers. Careful location of simple, one-piece bearing has resulted in high critical speeds at smaller shaft diameters. Straight rotor vanes simplify compressor design, maintain highest efficiencies at lower rotor speeds.

Let our engineers show you how you can economically increase the horsepower of your diesel engines up to 100%. New Thompson Turbochargers are available in sizes to efficiently blow diesels from 50 to 300 horsepower.



Write on your company letterhead for Booklet DPR-357, containing detailed information on Thompson Turbochargers.



JET DIVISION
Thompson Products, Inc.

Cleveland 17, Ohio

GM Detroit Diesel and was purchased from Peninsular Diesel, Inc. of Detroit.

EARLE Equipment Company of Detroit has sold a combination clam shell and dragline Koehring model 405 excavator. Powered by a 4055C GM Detroit Diesel engine, the new Koehring was purchased by A. T. Barnes Construction Co. of Cass City, Michigan.

CUMMINS Diesel Michigan, Inc. is replacing a gasoline engine with a model HRFB-600 Cummins diesel in a model 742 GMC truck-trailer for Thomas Fountain of Melvindale, Michigan.

RUSSELL Carroll of Wyandotte, Michigan has accepted delivery on a model TD-9 International crawler. The delivery was made by Wolverine Tractor and Equipment Company of Detroit.

TWO MODEL C Tournatractors have recently been delivered by Telford Equipment Company of Detroit to the Holloway Construction Company of Livonia, Michigan.

GREAT Lakes Steel Corp. located in Ecorse, Mich. has accepted delivery on 2 Allis Chalmers model HD6G tractors equipped with model TS6 front-end loaders. The sale was made by Earle Equipment Company of Detroit.

S. D. Solomon & Sons of Pontiac, Michigan has a new Super 99 Austin-Western grader powered by an International UD14A diesel. The new grader will be broken in near Homer, Michigan and was purchased from R. G. Moeller Co. of Detroit.

A MODEL 175A Michigan Tractor Shovel with a 2¾ cu yd bucket and powered by a GM 4-71 Detroit Diesel engine was recently delivered to the Caspian Construction Company of Caspian, Michigan. The sale was made by Lake Shore, Inc. of Iron Mountain, Michigan.

ROBERT D. Brown of Stony Ridge, Ohio, who hauls steel for Sente Trucking Co. has a new engine in his Diamond T semi-truck trailer. It's a Cummins model JBS-600 diesel rated at 150 hp and was installed by Cummins Diesel Michigan, Inc.

KENNETH W. Guy of Indian River, Michigan has recently accepted delivery on a new International model TD-9 hydraulic bulldozer. The sale was made by the Grand Rapids branch of Wolverine Tractor and Equipment Company.

MICHIGAN Tractor and Machinery Co. has delivered 5 Caterpillar model DW-21 Lowbowl Scrapers to Holloway Construction Co. of Livonia, Michigan.

The new scrapers have a 25 cu yd capacity and are rated at 300 hp.

ASME Elevates Four

Four outstanding engineers have been elevated to the rank of Fellow of The American Society of Mechanical Engineers, the Society announced recently.

Myron R. Bowerman, Director of Research for the Alliance Machine Company, Alliance, Ohio; Irvin H. Fullmer of the National Bureau of Standards in Washington, D. C.; Rawleigh Johnson of the Ingersoll-Rand Company of Phillipsburg, New Jersey, and John A. Worthington, manager, Koppers Company, Baltimore, are the men honored by election to a group which includes less than ten per cent of the Society's 41,000 members.

To be nominated for the rank of Fellow, an engineer must be of acknowledged professional attainments and have twenty-five years' active practice in his profession. At least thirteen years of membership in ASME is an additional requirement. Selection is by the Council of the ASME.

Mr. Bowerman is an authority in the field of crane construction, having contributed greatly to the development of many types of specialized overhead traveling cranes throughout his employment. He has begun a new standardization program for crane trolley travel and hoist drives. Mr. Fullmer, author of many publications on screwthreads, is a specialist in their standardization.

Cited for his outstanding leadership ability in the art of bringing out creative abilities of young engineers, Mr. Johnson is also described in the announcement as a "top-flight test engineer." Mr. Worthington, director of a division of a leading producer of industrial piston rings, is a leader in the design and development of modern piston rings and in establishment of industry standards.

Director Of Advertising

William L. Peterson has been named Director of Sales Promotion and Advertising for The White Motor Company, it was announced by P. E. Tobin, vice president-sales. Mr. Peterson's appointment is coupled with an expansion of sales development activities in connection with White's broader coverage of the truck markets. Mr. Peterson has been associated with the Timken Detroit Axle Company, Detroit, for the past ten years. Since 1950 he has been account executive handling sales engineering activities for Timken, Detroit, with various truck manufactur-

ers. During World War II he served in the Corps of Engineers as an equipment and maintenance officer in charge of heavy duty trucks and engineering equipment.

In addition to sales promotion and advertising, Mr. Peterson will coordinate sales training and transportation engineering operations for the company's

national sales organization. Roy A. Fryer will continue to be the company's advertising manager. Mr. Peterson is a graduate of Michigan State University, Lansing, with a degree in mechanical engineering. He is a member of Society of Automotive Engineers. He and Mrs. Peterson, with their three boys, are moving from West Dearborn, Mich., to Cleveland.



We made a
"Good Neighbor"
out of the
**DUCOMMUN ST.
STATION**

When the Southern California Gas Company planned the Ducommun St., Compressor Station, they were concerned about a bad neighborhood relation situation, unless something was done about quieting the engine compressors.

Logically the problem of minimizing engine exhaust and air intake noise was turned over to the Burgess-Manning Company . . . specialists in noise elimination. After a thorough analysis of the situation they recommended, designed and built especially engineered Burgess-Manning "SDF" Air Intake Cleaner Silencers and Burgess-Manning "BEO" Exhaust Snubbers for each of the eight Ingersoll-Rand Gas Compressors.

In addition, special Burgess-Manning Pulsation Snubbers were installed in the second stage discharge of the compressors to eliminate gas pulsation in the discharge piping.

As a result, the Ducommun St. Plant is the quietest of its type anywhere, an asset to its community and a pleasure to work in. The elimination of pulsation will keep maintenance costs at a minimum.

Successful installations of this kind are possible because of the years of research, study and experiment in the cause and effect of noise that preceded them. Burgess-Manning Engineers are specialists in the elimination of exhaust and intake noise and the pipe line vibration that pyramids maintenance costs.

When such a problem arises in your plant or projected installations, consult Burgess-Manning for a superior, economical solution. They can engineer excessive noise and vibration right out of your equipment and make a "Good Neighbor" out of your plant too!

**Eliminate Intake and Exhaust Noise,
and Piping Pulsation Problems . . .
Consult Burgess-Manning Engineers**



BURGESS-MANNING COMPANY

747 East Park Ave., Libertyville, Illinois
Dallas, Texas

New Gas Turbine Regenerators

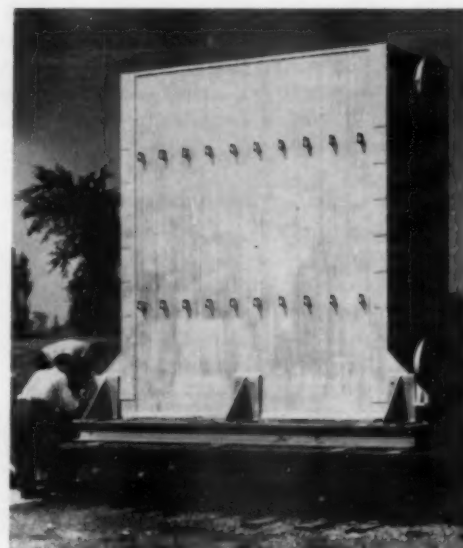
Harrison Radiator Div. of General Motors recently announced it has entered the field of producing mammoth gas turbine regenerators. Its first, a 56-ton two-sectioned unit, has just been completed at Harrison's West Lockport plant. Edward J. Reilly, General Sales Manager, explained that the new Harrison product would be installed at a gas turbine pumping station being built by General Electric for the Tennessee Gas Transmission Company in Bijou, Louisiana.

"The tremendous expansion of natural gas and other types of pipe lines which today are crisscrossing this country and Canada has created a large potential market for this type of product,"

Mr. Reilly said. Reilly noted that the unit, which was built for a 6,700 hp gas turbine, despite its being lighter in weight and smaller in size, gives better performance per pound and per cubic foot than gas regenerators in use today on similar installations. The thermal efficiency over gas turbines operating without regenerators is increased approximately from 18 to 27%.

"Fuel economy is obtained," Mr. Reilly added, "due to the fact that it pre-heats air from the compressor from 485° to 800° F before it enters the combustion chamber of the turbine." The over-all size of the unit is 12½ feet high by 10 feet in width. It has a depth of 10 feet. There are 440 tubes in the entire unit with 28,000 separate gas passages. It is fabricated from high tensile steel

to withstand high temperatures and reduce corrosion. The entire regenerator is insulated with fiberglass and aluminum covering.



Second section of 56-ton Harrison gas turbine regenerator being readied for shipment.

The brazed and welded unit was built in two sections. The 28-ton sections are mounted on special pads to allow for expansion. The first section of the regenerator was shipped on a special railroad well-car early in July. The second section left the Harrison plant late in July.

In addition to the regenerator, Harrison manufactures radiators, thermostats, defrosters, heaters and air conditioning systems for automotive applications and heat exchangers for aviation, marine, automotive and industrial use. The Harrison Radiator Division occupies two plants in Lockport and one in the Kensington section of Buffalo.



The RIGHT Insert for the Specific Application Is Always the Most Economical

For heavy duty service involving extreme wear, corrosion, and oxidation, the highest performance high-alloy seat insert that can be produced is almost certain to be the most economical. On the other hand, for light duty service, a low cost insert of low alloy content may be adequate for the requirements. Eaton produces seat inserts "custom tailored" to meet the demands of each specific application—skillfully blends chromium, nickel, molybdenum, tungsten, cobalt, and iron to provide the right properties to overcome wear, corrosion, and oxidation. The result is inserts which will give optimum life at lowest cost, in the kind of service for which they are designed.

*Call our engineers for a consultation
on your seat insert problems.*

EATON

—SAGINAW DIVISION—
MANUFACTURING COMPANY
9771 FRENCH ROAD • DETROIT 13, MICHIGAN

Demonstrating Pry Power



The operator uses this International Drott TD-14 Skid-Shovel to pry up a huge stone slab on 15 per cent grade on county road construction project near Columbia, Tenn. Owner Maury County Highway Dept. is constructing 4 mi of new rural road 6 mi north of Columbia. The TD-14 is the exclusive machine used by the county on the project, doing clearing, dozing, loading and leveling tasks.

Excursion Boat Holiday

The 200 passenger excursion boat *Holiday* is one of the more interesting diesel driven passenger boats of contemporary design and construction. It

is a double deck vessel built of welded steel for running sight seeing trips from the Soo Locks between Lakes Superior and Huron with open air seating on the top deck and the main deck is enclosed with large picture windows. This provides under-deck passengers with excellent view and protection against sun and rains.

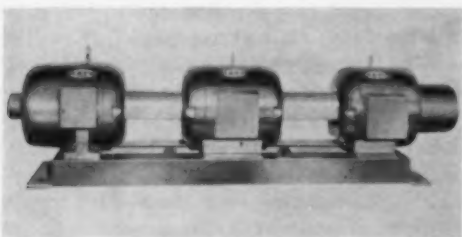
The *Holiday* is owned by Captain Milo Welch and Ray Gillespi and hails from Sault Ste. Marie under the house flag of Canadian-American Locks Tours, Inc.

The boat was built in 78 days by Blount Marine Corporation of Warren, Rhode Island. Dimensions are length over all 64½ ft, beam 23 ft and draft 5 ft. The propulsion engine is a General Motors, Model 6-110 diesel which gives a speed of 13 mph. Delivery was made via the Hudson River and New York State Barge Canal. As the total height would not permit passage under the canal bridges, the pilot house was made in two sections so the upper part could be removed for canal passage.



It is a matter of interest that the builders have turned out five vessels of this size and general type indicating many uses for small diesel driven boats in passenger services. A technique of relatively inexpensive construction has contributed to success in obtaining contracts. All the boats are driven by diesel engines of standard types.

Constant Power Source



Continuous ac output is provided by this motor generator set despite possible ac input line failures. Mounted on a common welded steel base and coupled directly together are from left to right, dc motor, ac motor and ac generator. Operating speed is 1800 rpm. Both the ac induction motor and the dc motor are 7½ hp. ac alternator rating is 3500 watts, single phase, 115/230 volts.

The dc motor is equipped with a speed control. When ac input fails, an automatic transfer switch brings in the dc drive motor which operates from storage batteries or other dc source. The entire length of the unit is 80 inches. Various sizes and types of these motor-generator sets have recently been developed by Kato Engineering Company,

Mankato, Minnesota, with single or three phase ac or dc output.

Chicago Office Appointments



Richard J. Wheelock



Donald R. Bohannon

Grant C. Woodard, General Sales Manager of The Cooper-Bessemer Corporation has announced the

appointment of Richard J. Wheelock to District Manager of its Chicago Field office. Simultaneously, Donald R. Bohannon has been appointed Branch Manager. Mr. Wheelock fills the district managership of Charles L. (Charlie) White who retired recently from active service with the company. As District Manager, Mr. Wheelock will direct the sales engineering, application, and service of Cooper-Bessemer engines, reciprocating and centrifugal compressors in the North Central District. Concurrent with the change is the assignment of Donald R. Bohannon as Branch Manager.

Working under the direction of Mr. Wheelock, Mr. Bohannon will assist in the application of Cooper-Bessemer equipment to petroleum, chemical and petrochemical industries.

**The economical,
trouble-free way to
boost engine power!**

**MIEHLE-DEXTER
ROTARY POSITIVE
3-LOBE
SUPERCHARGERS**

**12 production models...
the unit you need for
the power you need**



MODEL 40055



MODEL 55075



MODEL 5511



MODEL 3210



MODEL 4012



MODEL 4009



MODEL 5514



MODEL 5518

PROVED IN OVER



20 YEARS OF SERVICE

SUPERCHARGERS

TURBOCHARGERS

INDUSTRIAL BLOWERS

**PLUS... The Revolutionary New
m-d TURBOCHARGER**



Exclusive Miehle-Dexter monorotor design boosts fuel efficiency, develops high pressure ratios up to 3 to 1.

Miehle-Dexter Supercharger Division, Racine, Wisconsin • Telephone MEIrose 4-5521 • Another Product of Miehle-Goss-Dexter, Inc.

West Coast News

By James Joseph

TO John P. Hopkins, Inc., an Allis-Chalmers DAS-844 diesel to repower his La Plant Choate unit.

FOR EPHRATA, Wash's S&S Sand and Gravel Co., an Iowa rock crushing plant

powered by two model 12205 Detroit diesel generator sets, 400 kw continuous. Sale by Spokane's Intermountain Equipment Co.

TO P. S. PELL & Company, Honolulu, an 8 cylinder, 1280 hp model 38D8 $\frac{1}{2}$ Fairbanks-Morse diesel.

ALBERT Wallace, Juneau, Alaska, has

equipped his salmon troller with a model 3072, GM 3-71 diesel, replacing a gas engine. Sale via Seattle's Evans Engine and Equipment Co., Inc.

INTERIOR Transportation Co., The Dalles, Ore., has purchased six Detroit 3031RA diesels rated 80 hp at 1800 rpm for powering pumps on oil barges. Sale by Portland's Gunderson Bros. Engineering Corp.

SALE of a 6-110 GM Detroit diesel rated 220 continuous hp at 1800 rpm is reported by Gunderson Bros. Engineering Corp., Equipment Div. The customer is Crown Zellerbach Corp., West Linn, Ore.

TO REPOWER a 25-ton Ohio steam rail crane, International Paper Co., Longview, Wash., has installed a 6-71 Detroit diesel and torque converter.

AS auxiliary power unit for the *M/V Attu*, an Allis-Chalmers BD-77. Sale via Pacific Fishing & Trading Co., Seattle.

LATTENHAM Electric Co., San Francisco, has purchased a 3 cylinder, 90 hp Fairbanks-Morse diesel, model 49B4 $\frac{1}{2}$.

TO American Independent Oil Co., San Francisco, a 4 cylinder, 300 hp model 38F5 $\frac{1}{4}$ Fairbanks-Morse diesel generating set.

POWERING a new asphalt plant is a 295 hp, series 71 GM Detroit diesel, built up into a 200 kw continuous generator set with Delco ac generator.

FOR joint-venturers, Chas. A. Langlais Co. and Ets-Hokin & Galvan, San Francisco, a Fairbanks-Morse 2 cylinder 60 hp engine.

MOFFETT Engineering Co., Albany, Calif., has taken delivery on a model 49B4 $\frac{1}{2}$, 4 cylinder, 127 hp Fairbanks-Morse engine.

Factory Branch Manager

Appointment of Harold O. King as manager of the Jacksonville, Florida, factory branch of Electro-Motive Division of General Motors is announced by R. A. Stoddart, director of Electro-Motive branch operations. Mr. King succeeds Alfred R. Walker who retired under the company retirement program May 1st.

A native of Momence, Ill., where he was educated in the public schools, Mr. King joined Electro-Motive as a student apprentice on July 3, 1936. He transferred to the transmission division two years later, becoming an assistant foreman in 1941. On November 1, 1943, he was promoted to general foreman, transmission

division. Mr. King became factory branch superintendent in Jacksonville on Sept. 16, 1953, the position he held prior to his recent promotion.

Torque-Converter Bulletin

Principals of the hydraulic torque converter drive which Allis-Chalmers pioneered for use in crawler tractors starting in 1940, are outlined in a new piece of literature (MS-1233) now available from the Construction Machinery Division, Allis-Chalmers Manufacturing Co., Milwaukee, Wis. The new piece helps the reader translate torque converter drive features into work advantages with the help of action photographs showing Allis-Chalmers torque converter drive-equipped tractors on various types of jobs.

Locomotives For India

Two steel companies in India have awarded the General Electric Co. contracts to build a total of about \$2,100,000 worth of industrial locomotives. The orders, received from the Indian Iron and Steel Co. and the Hindustan Steel Co., reflect a current expansion of heavy industry in India. They bring to three the number of Indian steel firms to purchase large quantities of diesel-electric locomotives from General Electric's Locomotive and Car Equipment Department here this year. Earlier, the Company received an order from the Tata Iron and Steel Co. of Jamshedpur for more than a half-million dollars worth of locomotives.

Because the units will operate in temperatures ranging up to 120 degrees, one-hundred per cent humidity and extremely dusty conditions, all will be fitted with air filters to the engine cab and traction motors. All locomotives are powered with Cummins NHBIS-600 diesels of 275 hp. The smaller ones have one engine and the heavier ones each have two engines. Hindustan Steel, which is state-owned, has ordered 24 locomotives for a new plant it will put into operation at Rourkela. Krupp-Denag of Germany is designing and building the plant. Eight of those units will be rated at 80 tons and the other 12 at 35 tons. Indian Iron and Steel, a privately-owned concern, has purchased five locomotives; two 80-tonners, one 72-tonner and two of 31 tons, for its plant at Burnpur. The locomotives for both companies will be broad (66-inch) gage. The sales were placed by the International General Electric Co.

Must say something in favor of the congenial critic of everything in the plant and on the engine. By the simple law of averages, he is bound to be right—once in a while.

Standard **Young** Units solve SPECIAL cooling problems

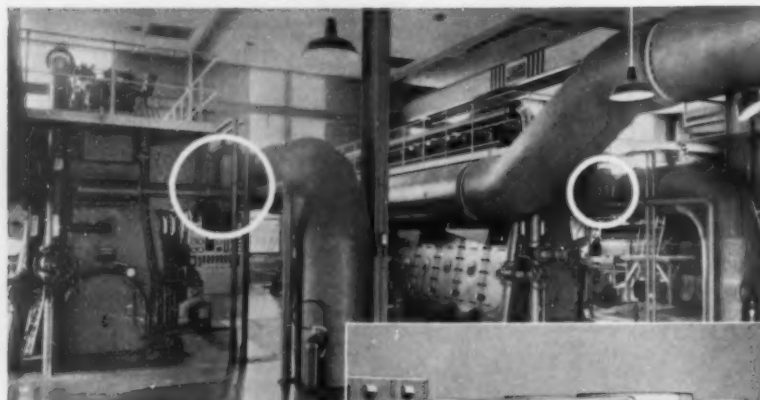


Photo shows the two Nordberg engines and Young intercoolers which are located between the scavenging air piping and the scavenging air header on the right side of each engine.

Exterior view of the rear portion of installation, showing the Young V.S.F. Units.

Young Intercoolers and VSF Units combine to provide flexible cooling

Limited water resources influenced the choice of coolers for these two 3870 hp Nordberg engines. Young Intercoolers reduce air temperature at engine intake air header, increasing efficiency in hot weather.

Two Young VSF Units arranged in parallel provide for optional use. Each has two 2-speed motor-driven fans. Vertical rolling doors control atmospheric cooling. Automatic control bypasses water around coolers to maintain desired jacket temperatures. All fans are controlled from panels alongside each Nordberg engine.

A special problem doesn't necessarily require special equipment; see Young about it first.

Write today to Dept. 407-J for catalogs 1652 and 550.



Young

Creative

RADIATOR COMPANY

RACINE, WISCONSIN

HEAT TRANSFER ENGINEERS

Executive Office: Racine, Wisconsin, Plants at Racine, Wisconsin, Mattoon, Illinois

Giant Lift Truck

Yale Materials Handling Division, The Yale & Towne Manufacturing Company, has announced the completion of one of the world's heaviest capacity industrial lift trucks, a high lift diesel electric platform model capable of handling loads up to 200,000 lb loads. The truck is designed to handle huge dies, expediting their transit between outside storage and inside presses. The new truck, better by 40,000 lbs in capacity any lift truck formerly produced by Yale. This unit was designed and built in the Division's main manufacturing plant, located at 11,000 Roosevelt Blvd. in Philadelphia.

Its total weight is 77,000 lbs and the truck is 21 ft 4 in. long. Its die carrying platform measures 13 ft by 8 ft. The truck is designed to provide 2 ft 4 in. of lift hydraulically. Yale's new heavy handler is powered by an International Harvester diesel engine-generator unit.

The generator produces 35 kw normal to 47.5 kw maximum output. The actual driving force is delivered to the drive wheels from two drive motors similar to those used in Yale Giant ram trucks.

The truck is driven by 4, 36 in. diameter x 16 in. face drive wheels and steers completely hydraulically through eight sets of castors wheels. Despite its tremendous weight and bulk, hydraulic power steering permits the lift truck to be guided with less steering effort than that encountered in an automobile equipped with power steering.

ITS NEW

Hose And Hose End Catalog

The publication of a new 40-page Hose, Hose Ends and Assemblies Catalog is announced by The Weatherhead Company, Fort Wayne Division, Fort Wayne, Indiana. The new catalog incorporates complete and detailed information on bulk industrial hose, permanently attached hose assemblies, swaged hose assemblies and ends, hose end swivel adapters, assembly instructions and installation data. The catalog has been designed to show the complete line of Weatherhead hose and hose ends, yet be in a simple, concise style for quick reference and easy ordering. At-a-glance charts are featured in the catalog for hose agent selection, hose specifications and hose end identification.

Over 180 elements are shown, in easy-to-read form, on the Agent Selector Chart. Resistance ratings of Butyl, Buna-N, Neoprene, Teflon and other Synthetic Compounds are identified with specific Weatherhead hoses. The bulk hose specifications include 24 Weatherhead

industrial hoses with complete information as to I.D. and O.D., maximum working pressure, proof-test pressure, minimum burst pressure, inner and outer tube materials, reinforcement, temperature range and types of hose ends.

Three pages are devoted to assembly instructions for all types of Weatherhead reusable hose ends. Simplified copy and line drawings show complete step-by-step procedure. Copies are available from Weatherhead Industrial Distributors or write The Weatherhead Company, Customer Service Department, 128 West Washington Blvd., Fort Wayne, Indiana.

ITS NEW

Plant Expansion

For the second time in less than 18 months, the Marine Pumps Division of Diesel Control Corporation, Wilmington, California, has expanded their plant facilities to handle their increasing volume of diesel engine sales, injection system servicing and test equipment manufacturing. The newly completed building that adjoins their new plant completed last year, will be used mainly for display and inventory of Allis-Chalmers (Buda) diesel engines, and an extensive parts department. According to Stanley E. Franklin, Secretary-Treasurer of the firm, they will now be able to carry a complete line of Allis-Chalmers engines and service parts for marine applications. Diesel Control Corporation is also distributor for American Bosch, Roosa-Master, Bendix, Demco, Robert Bosch lines of fuel injection equipment. Their fuel system overhaul shops are fully air-conditioned and temperature controlled. The firm also manufactures and sells world-wide the Unitest line of specialized fuel system test and calibrating equipment, and the Spiralap line of lapping equipment for use by diesel engine manufacturers, fleet overhaul and repair shops. Franklin was among the founders of the Diesel Specialists Association and is currently Secretary of the national organization.

Publication Issued

The feature article in the latest issue of *Production Road* (Vol. 19, No. 1) covers the fascinating progress heavy industrial equipment has made during the past three decades. The story starts with the inception of the modern, high-speed diesel engine and brings the reader up to date with a description of some of today's most modern equipment. Another important feature is the two-page article covering Twin Disc's latest addition to its line of single-stage torque converters—the 1500 Series. This article provides both physical and operational characteristics of the new single-phase unit, and is of interest particularly to

manufacturers and users of engines in the 30 to 212 hp range, with speeds from 1100 to 3200 rpm. Of interest to readers in the lumber industry are two feature stories on logging, one covering the northwest United States and the other New Zealand. *Production Road* may be had without cost by writing Editor, *Production Road*, Twin Disc Clutch Company, Racine, Wisconsin.

NOW AVAILABLE! The Brand New **DIESEL ENGINE CATALOG**, Volume 22. This giant, 400 page, 10½" x 13½", fully illustrated reference book containing complete and detailed engine and accessory sections is the biggest and best yet. Mail orders are now being filled for this "Bible of the Industry," which has been revised, rewritten and brought up to date completely from cover to cover. Send your order in now for this limited edition, which costs \$10 postpaid plus California sales tax where applicable. Send checks or company orders to **DIESEL PROGRESS**, 816 N. La Cienega Blvd., Los Angeles 46, Calif.



ACCURATE, CONTROLLED, Timed LUBRICATION

The New 82-V vacuum pumping unit "with dry sight feed," an exclusive Manzel development will end your liquid sight feed problems. Install them on any existing Manzel lubricator. Now — more accurate than ever... it will pay you to get complete detailed information on this dependable, field-proven Manzel unit.

WRITE FOR COMPLETE CATALOG

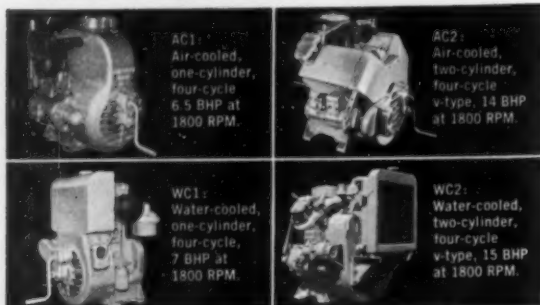
Manzel

LUBRICATORS • CHEMICAL FEEDERS • SLURRY PUMPS

275 BABCOCK STREET • BUFFALO 10, NEW YORK
A Division of Houdaille Industries, Inc.

THE BIG 4 IN DIESEL POWER

AMERICAN MARC Inc. dominates the field of lightweight, low-horsepower Diesels by building its diversified line from the "Big Four" basic models illustrated here. Purchase and maintenance of engines and parts are simplified by the use of these compact and rugged prime movers.



AMERICAN MARC also manufactures Diesel generating plants from 3 to 10 KW (AC or DC, and industrial three-phase), Diesel pumping units from 48 to 1700 GPM, marine propulsion, refrigeration units and power-packages for other services. American MARC can adapt any of its Big 4 engines to fit every job requiring from 5 to 20 BHP.

INQUIRIES ARE INVITED FROM DISTRIBUTORS AND DEALERS

AMERICAN MARC INC.
DIESEL ENGINES

1601 West Florence Ave.
Telephone OR 8-7174



Dept. D-97
Inglewood, Calif.

AMERICA'S LARGEST MANUFACTURER OF AIR-COOLED DIESELS

Specify
W.G.B.
REPLACEMENT
CARTRIDGES
and get all the lubrication
good oil provides

Available for all popular makes of filters.
WRITE FOR COMPLETE DETAILS AND NAME OF NEAREST DISTRIBUTOR

W.G.B. OIL CLARIFIER, INC.
KINGSTON • NEW YORK

A-C Reports Sales

Sales of the Allis-Chalmers Mfg. Co. for the first half of 1957 amounted to \$285,831,554, according to R. S. Stevenson, president. Sales for the same period in 1956 amounted to \$294,264,807. Profits for the first six months of this year were \$11,292,018 as compared with \$11,855,735 for the first six months of 1956. Earnings per share of common stock on 8,174,358 shares outstanding at the end of the period were \$1.35. Last year earnings per share were \$1.44 on 7,978,979 shares. Sales for the second quarter were \$148 million. The total reported for the same period last year was \$154 million. However, quarterly net earnings were about the same, amounting to \$6,071,321 this year compared with \$5,916,248 in 1956. Per share earnings were identical—74¢ in each quarter.

"During the quarter, sales of heavy generating equipment and other electrical apparatus continued strong. Movement of industrial equipment was steady. Farm equipment sales showed an increase over last year. Construction machinery sales were down, reflecting lower construction awards and the problems inherent in getting the road programs under way," Stevenson said. The backlog of unfilled orders at the end of June was \$225 million, about \$26 million higher than a year ago. This total does not include commercial orders of the divisions within the Tractor Group.

Sales Appointment

Fred G. Moser has been promoted to manager of original equipment sales by Johnson Bronze Co., one of the nation's leading producers of sleeve bearings and bushings. Moser joined the New Castle, Pa., firm in 1942 as a floor inspector. In 1946, he was promoted to assistant chief inspector and a year later moved up to field inspector and assistant inspector for engineering. Moser's most recent position with the company was director of product engineering. He served in that capacity six years before his latest promotion.

Neil Hyde Promoted

Appointment of Neil W. Hyde as personnel director of Detroit Diesel Engine Division of General Motors was announced today by Clyde W. Truxell, general manager of the division. The appointment is effective immediately. Until this appointment Mr. Hyde has been assistant director of personnel for the division. Mr. Hyde, who graduated from high school in Connorsville, Indiana, attended George Washington University. He first joined General Motors in 1937 as an assembler at the Fisher

Body plant in Baltimore, Maryland. Later that year he transferred to the Ternstedt division in Detroit as a safety inspector. In 1942, Mr. Hyde joined Detroit Diesel as a safety engineer and served in various personnel positions until he became assistant personnel director.

New Drilling Vessel

Levingston Shipbuilding Company of Orange, Texas has started construction of a large semi-offshore drilling barge for Producers Drilling Company of New Orleans. Friede and Goldman, Inc., Naval Architects and Marine Engineers of New Orleans, are the consulting naval architects for the Owners. The unit will be capable of drilling to depths in excess of 20,000 feet. Its design is such that it can drill in 15 to 18 feet of protected waters. Drilling machinery will be furnished by Mid-Continent Supply Company. Cummins diesels will be used on the rig.

Bulletin on Superior Diesels

Model 60 and model 80 Superior stationary diesels are shown and described in bulletin #110 recently issued by White Diesel Engine Division, The White Motor Company, Springfield, Ohio. The literature lists the engines as designed to provide low speed power for continuous, heavy-duty service. Engines are four-cycle, six or eight cylinder, in-line models, ranging from 530 to 2000 bhp and from 300 to 1250 kw, are available either naturally aspirated or supercharged, and can be furnished to run as diesel, dual-fuel, or gas engines.

Both models have been successfully employed in water works and sewage plants; municipal, public utility, institution, and office building power plants; oil field pipe lines and refineries; dredges and quarries; and telephone and general industrial service. The 12-page, two-color bulletin includes product photographs, illustrated construction features, dimension data, performance curves, and specifications. Free copies available from: Harry Clark, White Diesel Engine Division, Springfield, Ohio.

(ITS NEW)

Perfect Circle Dividend

A dividend of 25 cents per share has been declared by the board of directors of Perfect Circle Corporation, piston ring manufacturer. The dividend will be payable August 31, 1957, to stock of record at the close of business August 2. The quarterly dividend continues unbroken Perfect Circle's record of regular dividends since the firm was incorporated in 1928.

Paul Jordan Moves Up

Paul Jordan, plant engineer at the Dodge Manufacturing Corporation since 1943, has been appointed director of engineering according to an announcement by David Firth, vice president in charge of engineering. In his new position Mr. Jordan will direct all engineering and development work at Dodge, reporting to Mr. Firth. As plant engineer he has been responsible for the company's buildings and equipment. He is credited with designing the new mechanized foundry at Dodge and has been a key figure in an extensive plant expansion and improvement program which is nearing completion in Mishawaka.

Mr. Jordan attended Purdue University School of Mechanical Engineering where he received his B.S. degree in 1931. He has been with Dodge since 1935, and served as a member of the engineering department before becoming plant engineer. Mr. Jordan is a registered professional engineer in Indiana, a member of the American Society of Tool Engineers, and of the American Foundrymen's Society. He is past chairman of the South Bend section of the American Institute of Electrical Engineers, and a former director of the Engineers Club of St. Joseph Valley.

New Distributor

Appointment of Waukesha Sales and Service Company, Houston, Texas, as direct factory dealers for American

MARC Diesel Engines was announced by W. Denis Kendall, president of the engine-building company. Waukesha Sales and Service will handle both the industrial and marine lines in the Southern six-states area; and in addition, will carry complete stocks of service parts for the present line of American MARC lightweight diesel engines and the predecessor line of Hallett diesels.

Detroit Office Manager

The Garrett Corporation's Aero Engineering Division, headquarters Mineola, N.Y., has announced the appointment of Richard R. Worick as manager of the Detroit office. Formerly a sales engineer with the St. Louis office, Worick has been an employee of Aero Engineering since October 1953. He is a graduate of Kent State University, and did post-graduate work at Ohio State and University of Michigan. The 35-year-old Detroit manager is married and has three children. Aero Engineering is sales representative for Garrett's manufacturing divisions, and other manufacturers in the east.

Trane Sales Increase

New first half record sales and net profits were announced today by The Trane Company, manufacturers of air conditioning, heating, ventilating and special heat transfer equipment. For the first half of this year, Trane reported consolidated sales of \$39,762,334, an 8 per cent increase over 1956 figures of \$36,849,887. Net profit was up moderately at \$2,640,883 for 1957 as compared with \$2,573,872 for the same period in 1956.

For the three months ending June 30, consolidated sales were \$21,131,131 with net profit \$1,470,410, both highs. The 1956 quarter sales were \$19,229,951 and net \$1,424,250. Net earnings per share for the second quarter this year were \$.69 and for the first six months \$1.24, based on 2,129,846 shares of common stock outstanding. This includes the 150,000 shares offered June 6, the entire issue of which was oversubscribed and books closed in less than one day. The sale of this stock is reflected in the substantial jump in total current assets of \$37,059,117 for 1957 as compared with \$29,654,996 in 1956, and in working capital which is up to \$29,226,901 for this year as against \$22,415,717 last year.

The proceeds of this sale will, in part, be used by Trane for capital expenditures. Major construction projects scheduled for late 1957 and early 1958 include a new plant at Clarksville, Tennessee, for the manufacture of central-type residential air conditioners, a plant

in La Crosse to produce brazed aluminum heat exchangers, doubling of the firm's research and testing center here, and expansion of the company's plant in Scranton, Pennsylvania.

Equalizing High Altitude

The reduction of engine horsepower caused by operation at high altitudes can now be eliminated on the Caterpillar D8 Tractor by the use of a normalizing kit recently introduced by Caterpillar Tractor Co.

The new kit, which consists of a turbocharger and all manifolds and adaptors needed to mount it on the tractor engine, overcomes the cause of high-altitude power loss—insufficient oxygen to permit complete combustion of fuel. The turbocharger delivers air to the inlet manifold at greater than atmospheric pressure, thus permitting complete fuel combustion and restoring "sea level" horsepower up to 10,000 ft altitude. For

example, when operating at an altitude of 8000 ft, the normalized D8 will operate at the machine's sea level rating of 191 hp, while the standard D8's capacity at the same altitude would be 151 hp.

The normalizing kit does not increase the sea level horsepower of the tractor, but serves only to provide the needed oxygen to burn the same amount of fuel at high altitudes as at sea level. The kit is available either for factory installation on new D8 Tractors, or for field installation on machines already in operation.

ITS NEW

What with all the pressure lubrication and oil control rigs now in use, adjustment of the mechanical lubricator to feed just the right amount of cylinder lubricant is a lost art, but you gotta keep the rings in good shape if you want to keep the oil down in the crankcase and down in cost.



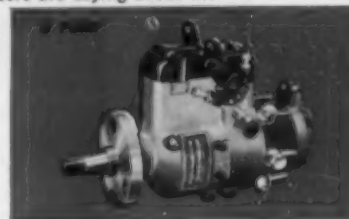
**Not a penny
for service
in 5000 hours
on my ...**

ROOSA MASTER

"I bought my Oliver tractor in 1954 and haven't had any engine or pump trouble after approximately 5000 hours of operation. I haven't spent a nickel on the Roosa Master Injection Equipment or engine for repairs. My Machine is used for back-filling, loading trucks, stripping and general excavation. My operator likes this machine very much.

"I own one more Roosa Master equipped Oliver front end loader which has operated for approximately 1000 hours with no trouble."

This praise from Contractor, Louis Recine of Newton, Mass., is just another example of what satisfied users are saying about the ROOSA MASTER Fuel Injection Pump, the lighter, smaller, more economical and dependable pump that makes good diesels better. For more complete information contact your engine manufacturer or write ...



HMS

ROOSA MASTER

HARTFORD MACHINE SCREW COMPANY

DIVISION OF STANDARD SCREW COMPANY
HARTFORD 2, CONNECTICUT

TRUSTEE ORDERS SALE!

ALL ASSETS AND EQUIPMENT
OF BOBBY BENJAMIN INC.

**MARINE and
INDUSTRIAL
EQUIPMENT**

MON., SEPT. 16th, 10 A.M.

\$4,000,000 GOV'T ACQ.
COST ENGINES, MOTORS
GENERATORS, PUMPS
TRANSMISSIONS, WINCHES,
SPARE PARTS, ETC.

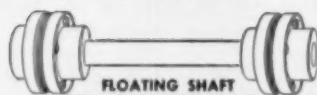
BOBBY BENJAMIN INC.
3618 N. W. North River Drive
Miami, Florida

FOR MAINTENANCE FREE
POWER TRANSMISSION

Specify THOMAS FLEXIBLE COUPLINGS



DOUBLE FLEXING
DBZ — for high speed,
heavy duty drives



FLOATING SHAFT
BMR — for heavy duty service
with excessive misalignment



DOUBLE FLEXING
AMR — for engine
and medium speed
drives



SINGLE FLEXING
SS — for engine-
driven generator
sets with out-board
bearings

Thomas' 40 years of flexible coupling experience is at your disposal to help you meet ordinary applications or special variations for unusual cases.

**UNDER LOAD and MISALIGNMENT
ONLY THOMAS FLEXIBLE COUPLINGS
OFFER ALL THESE ADVANTAGES.**

- 1 Freedom from Backlash
Torsional Rigidity
- 2 Free End Float
- 3 Smooth Continuous Drive with
Constant Rotational Velocity
- 4 Visual Inspection While
in Operation
- 5 Original Balance for Life
- 6 No Lubrication
- 7 No Wearing Parts
- 8 No Maintenance

INDUSTRIAL COUPLINGS
Compressor Drives
Pump Drives

DIESEL ENGINE COUPLINGS
Main Drives
Auxiliary Drives

MARINE COUPLINGS
Main Drives
Auxiliary Drives

Write for Engineering Catalog 51-A

**THOMAS FLEXIBLE
COUPLING CO.**

WARREN, PENNSYLVANIA, U. S. A.

Triple Screw Towboat



A new triple screw pushboat, built and owned by George W. Buras and Captain Bernie Rousselle, Jr., was recently outfitted with GM diesel drive at George Engine Company, Inc. on the Harvey Canal. This is the *Agnes B.*, a 600 hp workboat that measures 64 ft x 22 ft x 7 ft. In line with their custom-powering operations, George installed three GM diesel engines, Model 6071A with 4.5:1 reduction, front power take off, alarm system, electrical tachometers and hydrostarters. Her electrical power is supplied by two 32 Volt-1500 watt generators installed by George Engine on the engines. The *Agnes B.* was designed for general towing in Louisiana, Texas and Florida, and has quarters for eight. She will carry a crew of six.

Six For Mexico



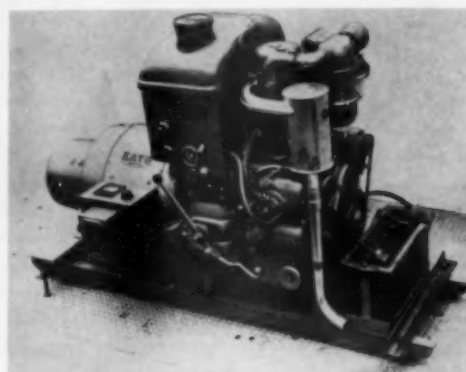
Six of the best equipped trawlers to join the Mexican shrimping fleet were the new 67 ft Florida type trawlers recently delivered to three Mexican shrimping concerns of Mexico City, Mexico. Tams designed and built by Diesel Engine Sales of St. Augustine, Florida, the new trawlers incorporate the latest developments needed for the gulf shrimping industry. Three of the vessels are owned by the Pesquera Atlantida S. A. They are the *Rio Grande*, the *Rio Nazas* and the *Rio Panuco*. Productos Refrigerados received the *La Isla* and the *La Campechana* and Pescadores Mexicanos took delivery of the sixth trawler, the *La Michoacana*.

Propulsion for all six vessels is supplied by a model D342 Caterpillar diesel having a max hp rating of 210 at 1225 rpm. The engine swings a four bladed 50 x 34 Federal propeller through Snow-Nabstedt 3:1 r&r gears and were supplied by the Gibbs Corp., Jacksonville, Florida. The engine rooms provide excellent accessibility to all machinery. Other equipment included were Goulds and Flomax pumps, Goodrich Cutlass stern bearings and 5000 gal. capacity fuel oil tanks. Diesel

Engine Sales has built an average of more than three vessels per month since it was started in 1943.

New "Dieselight" Units

Crossfield & Nicholson Company, Minnesota distributor for Deutz air-cooled diesel engines imported from Kloeckner-Humboldt-Deutz of Cologne, West Germany, announces the availability of a new series of "Dieselight" diesel electric generator sets from 5 kw (5000 watt) to 125 kw, incorporating the Deutz air-cooled diesel engine as standard prime mover and Kato alternators. 5 kw, 10, 15, 20, 25, 30, 40, 50, 60, 75, 80, 100, and 125 kw sets are available. These units are of simple and rugged design and are available for shipment from stock in any of the sizes indicated above.



The Deutz air-cooled diesel engine, which is the prime mover in all of these sets, is known for its cold starting qualities, being capable of starting at minus 20°F without external heaters. Fuel economy, complete independence from water, radiators, antifreeze and water pumps, are some of the main features of these "Dieselight" units.

Payscrapers In California



Crowell and Larson, Covina, Calif., contractor, is constructing the approaches and fills for a three-level traffic interchange near San Bernardino, Calif., where U. S. Routes 99 and 395 converge. The contract calls for 2.8 mi of roadway to be built, including 10 bridges. A total of 1,800,000 tons of borrow material is being transported from the bed of the nearby Santa Ana River to fills that will reach as much as 52 ft deep. The three International Payscraper units shown rumbling along here and a pair of International TD-24 crawler tractors are part of the fleet being used on the project. Each Payscraper averages 60 loads daily

on haul cycles that range from 2 to 4 mi because of the varying distances from the loading points to the fill sites. The project was started July 11, 1956, and is due for completion by Feb. 28, 1958.

New Cat For Florida Tug



The tow boat *Warrior* owned by the Peninsular Towing Co. of Port Everglades, Florida, was recently repowered with a new Caterpillar D397 marine diesel engine furnished by Shelley Tractor & Equipment Co., Miami. The new Cat, which develops 500 continuous hp at 1225 rpm, is equipped with Snow-Nabstedt 2:1 reverse & reduction gears. Installation also included Burgess-Manning air intake filters.

The *Warrior* is 61 ft long and operates out of Port Everglades along the Florida coastal waters.

Truck Crane Combination



For clean-up work along one of Los Angeles' modern freeways, Griffith Company, Los Angeles, California, uses this Cummins powered truck crane combination. The Northwest Model 25 has a 110 hp Model HRIP-400 Cummins diesel, and the Cook Brothers crane carrier utilizes a 150 hp Model HB-600 Cummins for power. The owners report that the Cummins diesels give this carrier exceptional maneuverability.

AAF Officials On Producers' Council Committees

Two American Air Filter Company officials have been elected to membership of working committees of the Producers' Council, Inc., a national organization of manufacturers of building equipment. John Frazier, Sales Promotion Manager, has been named to the Marketing Research Committee. Jack O'Neil, Assistant Advertising Manager, was selected for the Merchandising Committee.

The Marketing Research Committee studies meth-

ods of forecasting sales potentials and arriving at sales quotas. It also reviews and evaluates government and industry data that may be useful for research purposes.

The Merchandising Committee is responsible for setting up many projects staged by Producers' Council; is responsible for recommending training and educational programs for salesmen of member companies with particular emphasis on a better understanding of the needs and operations of architects and consulting engineers; and for overall promotion of the Council.

Another AAF official, Charles S. Stock, Manager of Unit Ventilator Products, is a member of the Board of Directors of the Council.

MODERN SLOW SPEED

DIESEL ELECTRIC GENERATOR SETS

- 600 RPM—Worthington BB5
100kw 3/60/480
- 300 RPM—Fairbanks Morse 33F16
1125kw 3/60/480

Complete With All Auxiliaries

Other Sets From 20kw to 1200kw

DIESEL DIVISION

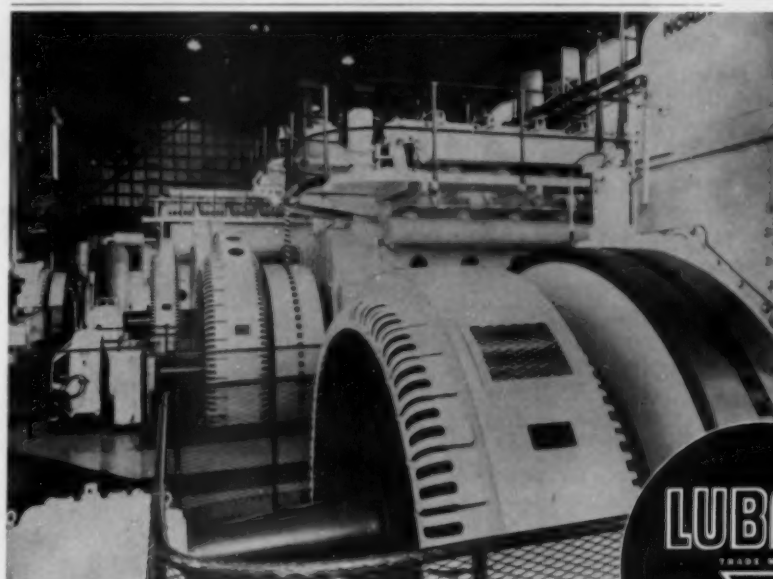
National Metal & Steel Corp.
TERMINAL ISLAND (Los Angeles Harbor), CALIF.
PHONE: NEvada 6-9871

A Channelcromed Diesel Engine Liner

Twenty-two hundred and fifteen Diesel-electric locomotive engine liners Channelcromed in 1955 and 1956, without even one failure, and with an all-time low in the rate of lubricating oil consumption.

Ask for new Bulletin 76

PENNINGTON CHANNELCROMIUM COMPANY
319 Dakota St., San Antonio 3, Texas



At Vero Beach . . . it's LUBAID-D Fuel Oil Additive!

Over the years, LUBAID-D has achieved an outstanding reputation for maintaining cleaner over-all combustion in diesel engines. Vero Beach, Florida, is only one of many plants where LUBAID-D is added to fuel oil to achieve better, lower-cost performance.

LUBAID COMPANY, Milwaukee, Wisconsin

New Orleans Notes

By Herb Lopez

The following sales have recently been completed by the George Engine Company of Harvey, La.

GENA, 32 ft S/S steel Roy Breaux Cruiser, has been put in service by its owners, Vernon C. Hingle and J. C. Ballay III. The owners are from Empire, La. *Gena* is powered by one model 6071A GM.

EDWIN N. Despau, Port Sulphur, La., recently purchased *Chihuahua*, a 35 ft T/S Roy Breaux Cruiser powered by two model 6071A GM diesel engines.

TO POWER a hull he now has under construction, Frank Scariano, New Orleans, La. obtained a matched pair of model 6071A GM diesel engines.

PERFORACIONES Delta C.A., Caracas, Venezuela, received *Delta Dog*, *Delta Easy*, and *Delta Fox*, all 40 ft T/S steel Gulf Master Boats powered by matched pairs of model 6071 GM diesels.

TWO 48 ft Sewart Seacraft T/S steel personnel transports powered by matched 6122T and a 6123T GM diesel engine have been delivered to Servicios Maritimos, C. A., Maracaibo, Venezuela.

A 35 FT Roy Breaux T/S Cruiser, *Ruby L*, which is powered by two model 4071C GM diesel engines has been delivered to Carl B. Charping, Boothville, La.

ADDING to their fleet, Fifty Marine Service, Harvey, La., purchased *Randy*, a 48 x 17 x 7 Harvey Canal shipyard steel T/S tug. *Randy* is powered by two GM diesels, model 62206RD and 62206 LB.

A SECOND cruiser, this one a 31 ft Sewart S/S steel cruiser powered by one model 6071A GM diesel engine, has been delivered to Allen Templet and Ray Templet, Morgan City, La. They call her *Al-Ray II*.

FOR AN intercoastal crewboat hull, Liebkemann, Inc., New Orleans, La., purchased two 4071C GM diesel engines.

A RECENT purchase of one model 62206RD and one model 62206LB GM diesel engine has been made by Marine Enterprises, Inc., Harvey, La.

FOR Equitable Tug C.219, Equitable Equipment Company, Inc., New Orleans, La., bought a 62206RD and a 62206LB GM engine.

FOR the Port Allen Lock (Alexander

Joint Venture), T. L. James and Company Inc. and E. J. Alexander, Port Allen, La., received delivery of two 3031C and four 2031 GM industrial units.

JOE JR., 50 ft x 15 ft x 6½ ft Pelican Marine Ways, Inc. S/S Tug which is powered by a model 62206RD GM diesel engine has been delivered to Joseph

Franicevich, Jr., Buras, La.

RECENTLY delivered to Edwards Construction Co., Houston, Texas, two model ACK-60 generator sets which were fabricated by George Engine Company, Inc.

A MODEL 2061A GM diesel engine has been acquired by Halliburton Oil Well

Cementing Company, Inc., Duncan, Okla.

AN ACH-20 generator set powered by model 2061A GM diesel engine, has been purchased by Sternwheelers Co., New Orleans, La., for a quarter boat.

EQUITABLE Equipment Co., New Orleans, La. received one 62508RD GM

NO other book
like it . . .

YOUR COPY OF VOLUME 22



This brand new edition of DIESEL ENGINE CATALOG

is now available. It is the biggest, most complete volume published to date, with more new sections and information on new engines and accessories than ever before—still only \$10 per copy.

diesel driven generator set.

AT Norco, La., T. H. Roger, Jr., received *Mary D*, a 37.5 ft Roy Breaux Cruiser powered by two 6071A GM diesel engines.

TWO 40 ft Star Marine Manufacturing T/S Crewboats, *Miss Elnora* and *Elton D.*, were acquired by Brewster-Bartle of

Houston, Texas. Vessels are powered by two GM 6071A diesel engines.

C. R. Gardner's *Marcia A*, 32 ft Roy Breaux Cruiser, powered by one 5061A GM diesel engine.

ADDING to his growing fleet, Ernest Amos, Jr., Buras, La., purchased a 32 ft Roy Breaux Cruiser powered by a

6071A GM diesel. Amos calls this one *Buckaroo*.

FOR one of their jobs, Avondale Marine Ways, Inc., Main Plant, obtained one 6031C GM industrial unit.

SOLD and delivered to T. K. Devitt, Braithwaite, La., *Carmen Lou*, a 35 ft Roy Breaux cruiser. The vessel is pow-

ered by two 4071C GM diesels.

AN 85 ft Calcasieu Crewboat, *Surf King*, was added to Morris Bros. Boat Service, Inc., De Ridder, La. Propulsion power is supplied by two GM model 62206 diesels.

MISS REBECCA, a 32 ft Halter crewboat, was recently put to work by its owners, Pete Turlich, Sr. and Jr. She is powered by two 5071C GM diesel engines.

Last Call!

The 1957 annual meeting of The Locomotive Maintenance Officers' Association starts on Monday, September 16, at the Sherman Hotel in Chicago. As in the past, there are many interesting topics scheduled for discussion, and the meeting promises to be well worthwhile.

Automatic Start-Stop Systems

The availability of automatic start-stop systems for four more models of diesel engines has been announced by Caterpillar Tractor Co. The new start-stop systems, which are available as attachments, are designed for use on the Caterpillar D326 (Series F), D337 (Series F), D375 (Series D) and D397 (Series D) diesel engines. Finding principal application on electric set installations, the automatic start-stop systems instantaneously crank the diesel engine when utility power fails. When the generator comes up to 90 percent of rated voltage, an automatic transfer switch changes the load from utility source to the electric set. The transfer switch reverses the load to the utility line and shuts down the electric set when utility power is restored.

Automatic start-stop also has application where electric sets assist utility power plants during peak load periods. The automatic start-stop systems also find use on pumping installations, where pressure or volume control is critical, but where full-time operation of the pump is not necessary.

Brochure On Marine Engine

Detroit Diesel Engine Division, General Motors Corporation, has announced the release of a new four page brochure describing its recently developed Series 71 E marine work boat engine. The brochure explains how the work boat engine will give more profit for commercial marine operations. The engine rated at 170 hp will save 10% in fuel. Five features of the new engine are illustrated in the text. Copies may be obtained from Detroit Diesel Distributors and Dealers or by writing the Division, 13400 W. Outer Drive, Detroit 28, Michigan.

DIESEL ENGINE CATALOG READY TO MAIL—NOW!

The size and format of Volume 22 of this "Bible of the Industry" will be the same as in previous years—a big 400 page book with easy to read page size of 10½" x 13½". The large, wide open format makes reference simple and quick. Each section is fully illustrated with photographs, power curves, specifications charts, and sectional views, as well as full description in the text of the products and their fields of application. You cannot afford to be without it in your business. Be sure of your copy of this Limited Edition by ordering Volume 22 now!

**Fill in and mail
the coupon now!**

The Catalog consists of the following sections:

1

ENGINES—All major manufacturers of diesel, dual fuel and gas engines are represented in multiple page sections. Text is supplemented with specifications, power curves, photographs and sectional views.

2

TURBOCHARGERS and SUPERCHARGERS—This section of manufacturers is detailed and fully illustrated to give complete information on this increasingly important phase of the industry.

3

TRANSMISSIONS—The latest information on torque converters, fluid drives, and other modern means of transmitting power are fully described and illustrated in this section.

4

ACCESSORY EQUIPMENT—Recent developments in fuel injection systems, governors, and other key accessory units are detailed and illustrated fully in this section.

5

MARKET PLACE—A convenient, time-saving listing of sources from which you can obtain the multitude of items and services needed by the fast growing Diesel Industry.

6

ADVERTISING—Leading manufacturers of engines, accessories, and services bring out the important features of their products in attractive, easy to read advertisements to further enhance the reference value of the CATALOG.

DIESEL PROGRESS

816 N. La Cienega Blvd.
Los Angeles 46, Calif.

Enter our order for.....
copy(s) of Volume 22, DIESEL ENGINE CATALOG,

*Check is enclosed ☐ Bill us ☐
*\$10.00 per copy (plus state sales tax when delivered in California).
When ordering from Sterling Areas, remit £4.0.0 to DIESEL PROGRESS, St. Paul's Corner, Ludgate Hill, London, E.C. 4.

NAME..... TITLE.....

COMPANY.....

BUSINESS CLASSIFICATION.....

ADDRESS.....

CITY..... ZONE..... STATE.....

SAVE HALF



HANCOCK Reclaims
Plungers and Bushings for
Any Diesel Injection Sys-
tem.

—Write for Catalog
and Prices Today—

HANCOCK
DIESEL SERVICE CO.

300 Walnut St. Findlay, Ohio

CRANK- -SHAFT REPAIRS

• REGRINDING SPECIALIZING IN
• METALLIZING LARGE
• STRAIGHTENING CRANKSHAFTS
• THERMIT WELDING
• CRANKPINS TURNED OFF IN PLACE
BRODIE SYSTEM 115 CLIFTON PLACE
BROOKLYN 38,
NEW YORK
AN ENGINEERING SERVICE MAIN 2-5242



HOLD GASKETS
SECURELY IN
PLACE DURING
INSTALLATION

- Perfectly aligned without grease, "goop" or strings.
- Bolts held firmly—ready for speed wrench tightening.
- Use on every gasket job—pans, plates and covers.
- Shop cost—less than 20¢ per job. SAVE 5 to 10 minutes.

You leave them in...

for a perfect seal

Guides are compressed as bolt is tightened to seal bolt threads and prevent oil seepage.



"PEE GEE"

"The best little friend a gasket (or mechanic) ever had!"

P&G

MANUFACTURING CO.

305 N.E. Russell Street • Portland 12, Oregon

SEND FOR A FREE TRIAL PACKAGE
26 GASKET GUIDES

P&G MANUFACTURING COMPANY
305 N.E. Russell St., Portland 12, Oregon

Company.....

Name.....

Address.....Zone.....

Specify bolt size (check one):

1/4" ☐ 5/16" ☐ 3/8" ☐ 7/16" ☐

ADVERTISERS' INDEX

Air-Maze Corporation	20	Harrison Radiator Division,	
Alco Products, Inc.	17	General Motors Corp.	2
American MARC, Inc.	78	Hartford Machine Screw Company	79
Amot Controls Corp.	65	Houdaille Industries, Inc.,	
Benjamin Inc., Bobby	79	Buffalo Hydraulics Division	25
Brad Foote Gear Works, Inc.	69	Manzel Division	77
Brodie System, Inc.	84	Interstate Diesel Service, Inc.	84
Buffalo Hydraulics Division,		Lane Plating Works	84
Houdaille Industries, Inc.	25	Lubaid Company	81
Burgess-Manning Company	73	Manzel Division of	
C.A.V. Ltd.	64	Houdaille Industries, Inc.	77
Clark Equipment Company	Third Cover	Marquette Metal Products Div.,	
Clayton Manufacturing Company	62	Curtiss-Wright Corp.	13
Cleveland Diesel Engine Div.,		Maxim Silencer Co., The	63
General Motors Corp.	24	Miehle-Dexter Supercharger Div. of	
Commercial Filters Corp.	23	The Christensen Machine Co.	75
Cook Company, C. Lee	12	Murray & Tregurtha, Inc.	67
Cooper-Bessemer Corp.	Fourth Cover	Napier & Son, Ltd., D.	22
Curtiss-Wright Corp.		National Metal & Steel Corp.	81
Marquette Metal Products Div.	13	Nordberg Mfg. Co.	59
DeLaval Steam Turbine Co.	14	P & G Manufacturing Co.	84
Delco-Remy Div.,		Pennington Channelchromium Company	81
General Motors Corp.	18-19	Purolator Products, Inc.	5
Eaton Manufacturing Co.	74	Quincy Compressor Co.	66
Electric Machinery Mfg. Co.	66	Schoonmaker Co., Inc., A. G.	84
Electro-Motive Div.,		Shell Oil Company	9
General Motors Corp.	11	Sinclair Refining Co.	71
Elliott Company	70	Standard Oil Co. of California	6
Engine Life Products Corp.	68	Standard Oil Co. (Indiana)	15
Engineering Controls, Inc.	60	Texas Co., The	Second Cover-1
Erie Forge & Steel Corp.	10	Thomas Flexible Coupling Co.	80
Fairbanks, Morse & Co.	21	Thompson Products, Inc.,	
Fuller Manufacturing Co.	4	Jet Division	72
Garrett Corporation, The		Twin Disc Clutch Co.	8
(AiResearch Industrial Div.)	26	W. G. B. Oil Clarifier, Inc.	78
General Motors Corp.		White Diesel Engine Div.,	
Cleveland Diesel Engine Div.	24	The White Motor Company	7
Delco-Remy Div.	18-19	Witte Engine Works, Oil Well Supply	
Electro-Motive Div.	11	Div., United States Steel Corp.	65
Harrison Radiator Div.	2	Young Radiator Co.	76
Hancock Diesel Service Co.	84		

AGSCO

ANNOUNCES ITS
SERVICE PARTS DIVISION

A. G. Schoonmaker Co., Inc.

NEW

DIESEL ENGINE PARTS

FROM CRANKSHAFTS TO HEADS
FOR ALL MAKES AND MODELS

30% to 50% SAVINGS

TRY OUR SERVICE

WRITE-WIRE-CALL

(S.P.D.)

"SAVE PARTS DOLLARS"

A. G. Schoonmaker Co., Inc.

Sausalito, Calif.
Sausalito 1600

Nites: San Rafael, Calif.
Glenwood 3-3230

30 Church St., N.Y.
Digby 9-4350

Nites: Oakland, N. J.
Oakland 8-7813

FOR SALE: 1928 Nordberg diesel engine; 2 cycle air injection; 17" x 25"; generator, exciter, and auxiliaries; good condition; invite your quotations for all or part, including removal. Donald P. Ziemke, City Manager, St. Louis, Michigan.

America's Largest GM fuel injector rebuilder



Interstate
diesel service incorporated

2093 East 19th Street • Cleveland 15, Ohio

Products sold exclusively through dealer and distributor organizations throughout the United States and Canada. Dealer inquiries welcome

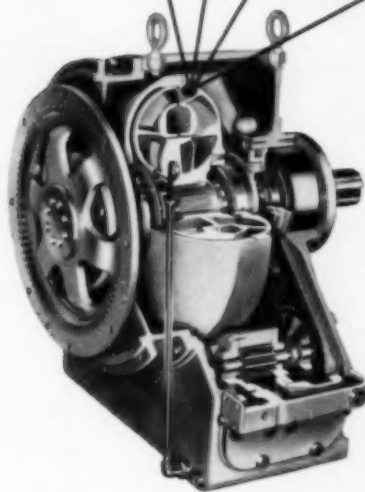
Grinding and Hard-Chrome Plating of Diesel Engine Crankshafts



ALL SIZES

Complete facilities for grinding, plating, Magnafixing, and electrically-controlled heat-treating. Largest hard-chrome plating plant in the Mid-Continent area. Experience • Quality • Precision

LANE
PLATING WORKS
5322 BONNIE VIEW RD.
DALLAS, TEXAS



**It can be done! — —
That engine will DO MORE,
LAST LONGER with a
CLARK Torque Converter**

You are sure of top engine performance and minimum wear when you use a Clark Torque Converter. Your engine may be operated all the time at its most efficient speed, with power output adjusted to the job's torque demand. And the smooth, steady flow of shockless power eliminates shock loads—reduces strain and wear on all working parts, in engine and power train.

These features are dependable working proof of Clark excellence:

- **True Hydra-Foil Blade**—an exclusive design of blade contour, maximum efficiency in torque build-up
- **No Cavitation**—proper oil flow prevents turbulence and air pockets to cause efficiency losses and wear
- **Ideal Accessibility**—easiest possible inspection and maintenance. No special tools required
- **Self-Contained Oil Circuit**—oil sump and passages cast in housing. No unnecessary fittings, no leakage
- **Complete Line**—horsepower 15 to 600; diameters 11" to 26"

Helpful literature sent promptly—use the coupon.

**CLARK
EQUIPMENT**

CLARK EQUIPMENT COMPANY, Falahee Road, Jackson 18, Mich.: Please send the CLARK Torque Converter Bulletin

Name _____ Position _____
Firm _____ Address _____
City _____ Zone _____ State _____

**A BONUS IN
PUSH AND SPEED
FOR THE
"CARCROSSE"**

PUSHING big 21,000-ton loads faster, more easily than most other boats in her power class, has become routine for the new, twin-screw 2400 shp "Carcrosse." She's another modern river boat, powered to great advantage with Cooper-Bessemer turbocharged, aftercooled direct reversing JS diesels.

Here's performance that pays . . . and keeps on paying! Check with Cooper-Bessemer on your needs in the 200 to 5,000 horsepower range.

The M/V "Carcrosse" . . . owned by Cargo Carriers, Inc., Minneapolis . . . designed and built by St. Louis Shipbuilding & Steel Company.

... with Cooper-Bessemer power



**MARINE DIESEL ENGINES • ENGINE-DRIVEN AND
MOTOR-DRIVEN COMPRESSORS.**



**cooper-
bessemer**

NEW YORK CITY • SEATTLE, WASH. • CHICAGO, ILL. • HOUSTON, TEXAS
WASHINGTON, D.C. • SAN FRANCISCO AND LOS ANGELES, CALIF. • ST.
LOUIS, MO. • GLOUCESTER, MASS. • NEW ORLEANS, LA. • COOPER-
BESSEMER OF CANADA, LTD., HALIFAX, NOVA SCOTIA